FOURTH-PLAN
(1970-1975)

National Planning Commission
His Majesty's Government
Singha Durbar
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MESSAGE FROM HIS MAJESTY THE KING *

The Fourth Plan has been formulated in the course of the programme of planned development, adopted by my government, in order to uplift the economic and social standards of the Nepalese people. The beginning of the Fourth Plan also marks the completion of fourteen years of planned development in Nepal and the beginning of the fifteenth year. Although progress made in the past fourteen years has been quite satisfactory, we have all realised the need to further accelerate the pace of development in the country. With the objective of utilizing the limited resources of the country in the most productive manner, it has become necessary to devote more and special attention to plan implementation and progress evaluation.

** Original text in Nepali.*

During the Fourth Plan period it is estimated that the annual rate of growth of gross domestic product (GDP) will be 4 per cent. While this rate of growth should be considered to be very low in our situation, my impression is that a higher growth rate of gross domestic product (GDP) can be reached by associating the people in the country's economic development in accordance with the directive principles of the panchayat system. The manpower resources that are going to waste today could be mobilized, to the maximum extent possible, in a disciplined way for development work. In this task the cooperation of all classes, of panchayat and class organizations at different levels, of the private sector, and the people in general is essential. It is, therefore, my firm belief that full cooperation of every citizen of the country will be forthcoming in the sacred task of national development. My thanks are due to all those who have laboured efficiently in formulating the present Fourth Plan, and I wish the successful fulfilment of this Plan.

July 24, 1970.

(Sd.) Principal Private Secretary to
His Majesty the King.

PREFACE

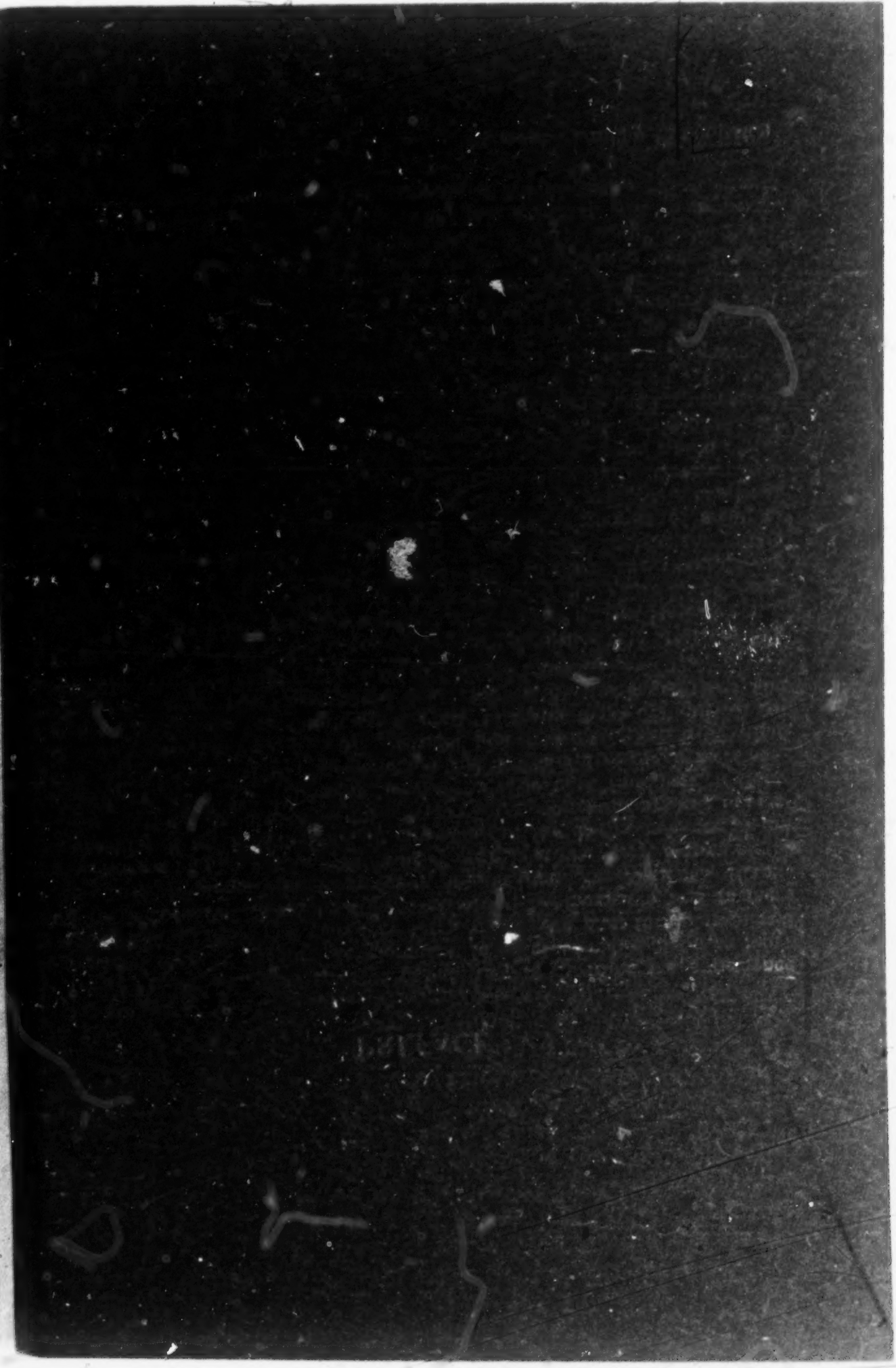
The Fourth Plan has been prepared, keeping in mind the experience of fourteen years of planned development, in order to make planning more practical and effective and to reduce the gap between plan formulation and plan implementation. Economists, industrialists, businessmen, and farmers were also associated in the formulation of this Plan. The National Planning Commission had set up 'Planning Forums', at the very beginning of the drafting of the Fourth Plan, in almost all of the degree colleges in the country and had organized an advisory panel of economists consisting of elected members from the representatives of these forums. Similarly, a Committee of Industrialists and Businessmen and a 'Committee of Farmers', representing industrialists and businessmen and farmers respectively, had also been organized. The Commission wants to thank these Committees for their cooperation. The Commission also appreciates the suggestions and cooperation received from village and district Panchayats.

The National Planning Commission had published the draft of the Fourth Plan for public reaction before submitting it to His Majesty's Government. This final draft, prepared on the basis of the suggestions received, has been submitted to His Majesty's Government. The Commission, of course, had realized that one month was too short a period for public comment. However, in order to allow the maximum number of countrymen to read the draft within a month, the draft plan was made available in mimeographed copies and was also serialized in the daily 'Gorkhapatra' from May 25 to June 7, 1970. If more time been allowed, there would certainly have been more public response. The Commission appreciates all comments it has received. As the Plan will be implemented by means of annual budgets, any suggestion regarding the Fourth Plan would be welcome in the future, and due attention will be given to such suggestions.

Finally, the National Planning Commission would like to thank the different Ministries and Departments of His Majesty's Government and other offices for the constant cooperation it has obtained from all of them. As the Planning Commission had always aimed at working very closely with the operating Ministries and Departments in the drafting of the Plan, it is also the Commission's hope and belief that the Plan will be properly implemented by the concerned Departments of His Majesty's Government.

July, 1970

National Planning Commission



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PART I
GENERAL

CHAPTER I

Objectives and Policies:

Economic development is a continuing process. Its aim is to gradually increase public welfare and to prepare the infrastructure needed for accelerating economic growth. Although an increase in production is the first step towards the goal of development, this goal in itself is not sufficient to fulfil the aspirations of the people, especially in the present stage of our development. As production increases, a suitable framework for equitable distribution should also be extended. Expansion of foreign trade is also important when considered in terms of our growing need to obtain capital goods and technical know-how in the course of development.

The country has acquired several years of experience in the management of development programmes. Future development will be built upon the foundation of economic and social achievements of this period. Since most of the resources to be available for the Fourth Plan will be needed for completing existing projects begun during the earlier Plans, it is imperative that we consolidate the continuing projects rather than involve ourselves in new projects during the forth-coming Plan period. Hence, it is evident that our major effort during the Plan period will be directed towards furthering the successes of past planning, thereby providing new impetus to future developmental activities.

The success of the Fourth Plan will depend in large measure upon the amount of investment drawn out of available resources for various development programmes and projects. The objectives of these programmes and projects must be consistant with sectoral objectives based upon the framework of national goals and policies. Therefore, while drafting the Plan, national goals and policies must be set prior to sectoral objectives and policies. However, this should be done without losing the essential harmony between the two.

Investment resources available for development programmes and projects during the Plan period will be guided by the following objectives. Since the desirable goals of national development are numerous, it would not be possible either to spell them out or to fulfil them all at once. However, some basic objectives which are consistent with the Panchayat System and the guiding principles of the Constitution and of highest priority are as follows:

1. To maximize output:

Increase of public welfare is co-terminus with a higher level of economic development which, in turn, results in increased production. In order to end economic exploitation, suitable changes in the system and organization of both distribution and exchange should accompany increases in production. Since the dangers of exploitation and undue economic pressure are great in a poverty striken society like ours, our initial efforts must strike at the very root of poverty. Since low productivity is the root cause of poverty, in order to create a *society free from exploitation*, it is first necessary to *increase production* to the maximum extent.

This objective is essential not only from the point of view of modernizing our economy on a sound basis, but also from the point of view of inspiring public confidence in the development efforts by providing tangible improvement in the work-a-day lives of the people at large.

Due to a lack of necessary data, it is not possible to calculate the actual rate of growth of gross domestic product during the Fourth Plan period. However, on the basis of the data that was available during the drafting of the Fourth Plan, the proposed investment and projects to be completed during the Plan period are likely to generate an increase in GDP of 4% per annum during the Plan period.

2. To establish the base for sustained and long-term economic growth (viz. Transport, Communications, Power etc.):

The building of infrastructure like transport, communications, and electricity warrants great attention in the preliminary phases of development because it helps to accelerate development, as well as helps to equally distribute produced goods. It is equally necessary to provide a base for the long-term development, as well as to provide minimum increases in the living standard of the people. While selecting projects and programmes for investment in the Fourth Plan, effort has been made to strike a balance between the two objectives: to increase per capita income by immediate increases in production and to build the necessary base for long-term development.

3. To expand and diversify international trade:

Because Nepal is land-locked and lacks long experience in foreign trade, expansion and diversification of international trade have become major goals of economic development. With a desirable expansion and diversification of export trade, our economic growth would gather momentum and our capacity to import the essential materials needed for development would be enhanced. Economic relations between Nepal and India will continue to remain close, nevertheless, diversification of Nepal's foreign trade is essential because sole dependence on a single country is undesirable from an economic point of view.

4. To secure accelerated pace of development with maximum economic stability by controlling price level:

Economic development and stability should be considered together in order to avoid any adverse effect of development which might result in the economy. Hence economic stability along with economic development should be regarded as an additional goal. During the Fourth Plan period, it will be essential to maintain general economic stability by adopting suitable monetary and fiscal measures, accompanied by control of the price level and improvement in the terms of international trade. Economic stability is not limited to price stability. Rather, it would encompass all the economic policies adopted by the government in keeping with the aims and the objectives of the Plan. Frequent irrigular changes in economic policies can adversely affect the planned process of development. Hence, it is essential that economic stability is maintained for the steady growth of the economy.

5. To make effective use of manpower resources and to control population growth:

While setting the goals of economic development, it has become necessary to consider the effective utilization of available manpower resources and the control of population growth within desirable limits. Although the rate of growth of population in Nepal appears to be low in comparision with the growth rate in many other countries, it is not a desirable rate in relation to available resources, especially cultivable land. The family planning programme will help improve the situation and thereby uplift the standard of living of the people. By the use of labour intensive techniques and indigeneous resources as far as is economically practical, employment will increase due to the multiplier effect. At the same time, the objective of maximum use of manpower resources will also be fulfilled. Moreover, during the Plan period, increases in agricultural productivity and in private and public investment in the industrial trade, and construction sectors will result in a considerably more effective utilization of the labour force. In order to transfer surplus man-power on a large scale from agriculture to non-agricultural sectors, it requires diversification in the structure of the national economy. Obviously it will not be possible to achieve this within the short period of five years.

6. To create conditions conducive to the emergence of a society free from exploitation:

The Panchayat System has envisaged a social order which is free of undue economic exploitation of individuals or class by any other individual or class. Truely speaking, the five year period of the Fourth Plan will be too short to fulfil the long-term goals of the system. It is, however, important that the programmes of each development plan are designed to push the country towards that ultimate goal. It was for the purpose of social justice and economic progress that the land reform, 'Mulki Ain' (code of civil and criminal laws) was adopted and that the development programme in agriculture, industry, education, health, and roads were implemented on a country-wide basis. In the Fourth Plan period these programmes will continue to expand in order to consolidate the base for the establishment of a society free from exploitation.

Regarding policies to achieve the above mentioned national objectives, the following factors will definitely get due consideration:

1. Mobilisation of internal resources:

It is imperative that the rates of investment and capital formation be increased to the maximum possible extent in order to accelerate the pace of development and to create the required infrastructure. Obviously, availability of investment capital is essential. Although foreign aid plays an important role in the Fourth Plan, increases in development expenditure are dependent upon mobilisation of internal resources. This is also essential in order to decrease the country's dependence upon foreign aid. Timely steps on the part of the Government would include increases in taxation, as well as austere measures regarding recurring expenditures. It has been observed that the public sector and commercial organizations should also contribute to the mobilisation of internal resources.

Another essential policy should be directed towards increasing the level of savings in the private sector.

Domestic savings from the private sector will have to be mobilised. The policy should be aimed at encouraging the private sector to save more from its additional income, as well as making institutional reforms. In addition, the channels of investing the mobilised savings must be made more attractive and effective.

In order to fulfil the aim of maximum increases in production, the investment rate must increase. There should be simultaneous changes in the investment patterns and diversion of resources into more productive sectors. In view of our present economic condition, emphasis must be placed on agriculture development so that maximum increases in production can be accomplished even while utilizing limited investment funds. Improvement in existing facilities, rather than establishment of new ones, is essential so that adequate assistance can be provided for development in other fields. The tendency to increase expenditure in the social sector on education and health should not be encouraged. Greater emphasis will be made to re-in force already existing facilities than to expand activities in this field. In the industrial sector, attention has to be paid towards creating appropriate conditions to attract private sector investment. In order to give impetus to agro-based industries in accordance with the objectives set forth in the Fourth Plan, the current policies will have to be reviewed and priorities (in industry) will have to be changed. In the transport and communications sector, the determining criteria for additional facilities should be linked directly to the needs of the various factoral programmes and to long-term development needs. Austerity has to be strictly followed in different sector, including building construction. Attention must be paid to inter-linked projects making sure that they are balanced since discrepancies in one sector may have adverse effects in another one. Due attention should also be paid to regional and geographic interlinkages and balance. If this pattern is followed, maximum utilization of available resources can be ensured.

2. Concentration of limited resources:

As limited resources scattered in different projects and programmes are not likely to be utilized in the optimum manner, they should be concentrated in those areas capable of creating maximum increases in production. The logic behind this is that the results of development activities of some important sectors would create a favourable reaction and therefore create a viable base for future development. It has been observed that limited sources can be concentrated from an administrative view point as well.

The policy of concentrating resources has been used for working out details concerning regional development in the Fourth Plan period. It has been agreed that the unequal level of development among the various regions must be narrowed down. The meaning of regional consideration in the Plan is not that there should be equal distribution of available resources nor that the development of all regions be the same. It is essential that attempts should be made to create a balance between national and regional development by the proper utilization of resources and the extension of the benefits of development work to as many different areas as possible. However, steps which will help to achieve the long term goals can be taken during the initial period.

During the Fourth Plan period, efforts will be made to create growth centres for the selected regions. It is natural that certain regions will have greater potential for development due to geographical, economic and social factors. Therefore, identification of such regions is essential. However, development of remote areas is to be kept in mind in order to enable the national economy to progress continuously. It is essential that the long-term policy be adopted for the development of hilly regions during the Fourth Plan in order to create a base for economic growth by providing work opportunities to the population of those areas with low levels of resources per capita. On the basis of this policy, attention will be focused on a unification of hilly areas and Terai areas by increasing economic relations which would result from the implementation of regional development plans. Accordingly, the selection of areas to initiate the regional development programme will be based on the existence of transportation and other facilities and the potential for their expansion.

3. Incentive for investment in private sector:

The public sector has to play an active role in the economic development of countries in the preliminary stages of economic development. Although the policy of creating basic infrastructure is intended to provide incentives for investment in the private sector; if the provision of such facilities does not result in an increase in the quantity of productive investment the government will have to be active in directly establishing industrial projects. While doing so, there might arise problems relating to management and operation in such industries. If the management of public sector industrial enterprises is not satisfactory, the consumers will suffer unwarranted difficulties. Consequently, there will be a substantial rate of decrease in governmental income which may further discourage the private sector.

Nepal does not lack private capital, although it does lack oportunities for productive investment. After implementation of the land reform programme, capital in the hands of landlords has remained idle due to a lack of investment opportunities in the economic sectors. There would be a considerable increase in the amount of private investment from the landlords if the avenues to sound investment were opened up. It is, therefore, necessary to work towards creating an environment favourable to industrial and business investment.

The following measures shall be taken during the Fourth Plan period for the purpose of augmenting private sector investment:

(a) Nepal Industrial Development Corporation (NIDC) will be well organized and made more effective in its functioning;
(b) Current industrial policies and priorities will be reviewed and the new priorities will be spelled out in clear terms according to the objectives of the Fourth Plan in order to encourage industries by providing incentives and the necessary facilities;
(c) The need for various kinds of trained manpower for future industrial development will be assessed and training programmes and facilities will accordingly be worked out;
(d) Existing financial institutions will be encouraged to advance loans to those landlords willing to sell their lands to the tillers so that they may invest in selected industries;
(e) Incentives will be given to financial institutions to help expand and develop the industries already established;
(f) The policies and programmes of cottage and small scale industries' development thus far adopted shall be evaluated. Future programmes encouraging this sector will be based upon a few selected industries suitable to different regions. Assistance and facilities to be provided by the government will be decided accordingly.

For the last few years government has involved itself directly or indirectly in commercial activities for two obvious reasons:

(1) to regularly provide consumable goods of adequate quality at fair prices to the consumers, and (2) increase government revenue by earning a fair profit which can be invested on development works. Except for the above two reasons, government interference and competition with the private sector is undesirable. Nor should the government interfere in the private sector when it is operating within government regulations and in the social interest. This will be the guiding consideration for the government before it takes any commercial steps during the Fourth Plan period. In fact, the private and government sectors are two integral parts of a single process, and economic development is heavily dependent upon the progress and contributions of both.

4. Trade policy:

According to the objectives of the Fourth Plan to expand and diversify foreign trade, production of exportable goods will be stressed. Since processed goods fetch a higher price than unprocessed and raw goods, our

efforts should be directed towards the establishment of agro-based industries. Results of trade talks with India, due to be concluded during 1970, and the subsequent trade treaty will be crucially important for the future expansion of Nepalese foreign trade. It is, therefore, necessary to determine now the priorities, on the basis of which, the trade relations with India should be discussed, as well as to review the economic relations of Nepal with India. Appropriate revision in the current bonus system shall also be made in order to promote export trade. The foreign exchange policy to be defined in this context will also indicate the most favourable level of foreign currency reserves to maintain and the measures to better utilize our surplus reserves.

5. Social justice:

In order to broaden the base of social justice and to lessen undue economic pressures during the Fourth Plan period, genuine peasants will be given the opportunity to increase production by a more effective implementation of land reform programme. Due consideration will also be given to the regulation of production costs and the quality of produced goods in the interest of public welfare. To enable a majority of the people to contribute to national production, small industries will be developed and extended in a well organised way. Co-operatives will also be strengthened on a viable economic basis. Timely changes will also be made in the tax and land revenue systems of HMG in order to make them more just and equitable. According to the Panchayat System's goal of enlisting greater cooperation of the people in the economic development of the country, attempts will be made more effectively to make involve Panchayats of various levels in the process of both plan formulation and implementation in order to make the participation of people in the local development work more active and dynamic.

CHAPTER II

PLAN OUTLAY & ITS ALLOCATION

Review of the Third Plan:

The Third Plan attempted to increase the Gross Domestic Product by 19 per cent. The Plan envisaged an outlay of Rs. 2,500 million, of which Rs. 1,740 million was the public sector share, with the panchayat sector and the private sector receiving Rs. 240 million and Rs. 520 million respectively. After including the Government Grants-in-Aid to Panchayats of Rs. 40 million and equity investment in public sector of Rs. 20 million, the public sector outlay for the Plan period would come to Rs. 1,800 million. In addition, the Plan also envisaged the provision of Rs. 150 million of credit to the private sector through financial institutions in the public sector.

Compared to the above investment target, it is estimated that the actual development expenditure in the public sector during the Plan period would be Rs. 1,780 million. This figure is based on the actual expenditure in the first three years of the Plan period, the revised estimate of 1968-69 and the original budget estimate of 1969-70. With regard to investment in the panchayat and private sectors, no information is available. The details of public sector expenditures are given in Table 1.

Although the above expenditure were incorporated into the development budget, they also include regular expenditures. It is, therefore, necessary to ascertain the amount of 'actual' development expenditure incurred during the Plan period. In accordance with the newly adopted classification system (of regular and development expenditure) followed by the Ministry of Finance on the advice of the National Planning Commission, the actual development expenditure for the Third Plan period will be only Rs. 1,420 million. This estimate is based mainly upon the analysis of the budget for the year 1968-69. The development expenditure under the traditional and new classification is indicated in Table 2.

TABLE 1

PUBLIC SECTOR EXPENDITURE DURING THE THIRD PLAN

(Rs. in Thousand)

Sectors	Plan Target	1965—66 Est.	1965—66 Actual	1966—67 Est.	1966—67 Actual	1967—68 Est.	1967—68 Actual	1968—69 Est.	1968—69 Revis.	1969—70 Est.	Total Est.	Total Actual *
1. Transport, Communications & Power	875000	130678	117027	152851	116839	147371	128056	173036	186879	324504	928040	873305
2. Agriculture & Rural Development	377500	63883	56966	104755	74362	98561	70665	101144	67061	128658	497028	397739
3. Industry	125000	21326	21726	18759	17507	20333	13628	16493	13149	20579	97490	86589
4. Social Services	292500	50058	44910	50629	43730	50237	38396	56152	44872	67119	279186	239027
5. Miscellaneous	70000	37809	22325	49487	19866	11584	17719	58150	49019	59276	236666	168205
6. Unallocable	—	100	100	500	500	1100	1100	53400	500	7500	62600	14200
Total	1740000	308854	263054	376932	272804	349186	269564	458375	365980	607663	2101010	1779065

* This includes actual figures of the first Three Years plus the revised and estimated figures of the last two years.

TABLE 2

DEVELOPMENT EXPENDITURE UNDER THIRD PLAN

(Rs. in million)

Fiscal Year	Under traditional classification	Under new classification
1965-66	263	232
1966-67	273	217
1967-68	270	225
1968-69	366	300
1969-70	608	450
Total	**1,780**	**1,424**

The above table reveals that during the Third Plan period development expenditure in the public sector, under the new classification, is Rs. 360 million less than development expenditure under the prevailing system. When the increase in national output is compared to the expenditure, it becomes necessary to determine the volume of the actual capital investment out of such increase. Since the recurring expenditures shall be included in development outlays under the new classification, it is clear that the volume of capital investment shall be reduced by less than 1,420 million.

The estimation of expenditure during the Fourth Plan period is based on the new classification of the development expenditure. Accordingly, provisions for preparing the development and regular budgets (according to the new classification) shall be made. The details of this are shown in Annex 2.

Priority of the Fourth Plan:

In conformity with the objectives and policies of the Fourth Plan, priority has been given to the continuing projects which were started during the Third Plan period or to those projects related to foreign aid. With the objectives of producing more within a short period of time and the creation of the infrastructure for accelerating the process of economic development in the future, priority has been given to the development of basic sectors like transport and communications during the Fourth Plan period. The lack of transport and communications has become the main deterrent to accelerating the process of economic development. No large scale development in the agricultural and industrial sectors is possible without adequate communications facilities. Therefore, as some new projects essential for regional development have to be planned along with the uncompleted projects started during the Third Plan period, the greater portion of expenditure in the public sector has been envisaged for the development of transport and communications facilities.

More than 93 per cent of the manpower in Nepal is engaged in agriculture. Agricultural development is, therefore, very important and

the improvement of the standard of living of the majority of the people is possible only by increasing agricultural production. Increased food production is essential for accelerating the speed of development and to eliminating the deterrents to development. Agricultural products also provide the raw materials required for various industries. In view of these factors the agricultural development programme has occupied an important place in the Plan.

In order of priority, industry is third after transport and agriculture. Although the main responsibility for developing industries falls upon the private sector, His Majesty's Government may involve itself when the private sector is unable to develop certain basic industries. During the Fourth Plan period, firm reform measures will be undertaken for the reinforcement of industries that have already been established in the public sector.

Although it is desirable to expand such services as education, health etc., the improvement and strengthening of existing facilities, rather than expansion of them, has been considered more appropriate during the Plan period because of increasing expenditures in this sector.

Expenditure Required for the Fourth Plan:

With regard to the above mentioned priorities and the fulfilment of the objectives and programmes of the various sectors, the total expenditure planned is Rs. 3,540 million. The estimated breakdown by sectors is as follows:

Rs. 2,550 million in public sector,
Rs. 120 million in panchayat sector and
Rs. 870 million in private sector.

Out of the Rs. 3,540 million, 2,930 million shall be in the form of capital investment. This could be further divided according to sectors, as Rs. 2,250 million in the public sector; 120 million in the panchayat sector and Rs. 650 million in the private sector.

TABLE 3

BREAKDOWN OF EXPENDITURE IN THE FOURTH PLAN

(Rs. in million)

	Public Sector		Panchayat Sector		Private Sector		Total	
Sectors	Amount	Per cent	Amount	Per cent	Amount	Per cent	Amount	Per cent
1. Transport & Communications	1050.0	41.0	52.0	43.3	150.0	17.3	1252.0	35.4
2. Agriculture, Land Reform, Irrigation, Forest & Botany	662.8	26.0	39.0	32.5	470.0	54.0	1171.8	33.0

3. Industry, Commerce, Power & Mining	470.0	18.5	—	—	250.0	28.7	720.0	20.3
4. Panchayat, Education, Heath & Social Services	352.5	13.8	29.0	24.2	—	—	381.5	10.8
5. Statistics	14.7	0.6	—	—	—	—	14.7	0.4
Total	2,550.0	100.0	120.0	100.0	870.0	100.0	3,540.0	100.0

Expenditure in Public Sector:

Out of the total expenditure of the Fourth Plan,the estimated expenditure envisaged for the public sector is Rs. 2,550 million. Also, His Majesty's Government will make available Rs. 20 million as a development grant for the panchayat sector. Thus His Majesty's Government will allocate Rs. 2,570 million for the development budget of the Fourth Plan.

Considering the objectives and the amount allocated in the public sector, the average annual expenditure comes to be 500 million of rupees. It shows a significant increase when compared with the annual expenditure of Rs. 290 million during the Third Plan period under the new classification of development expenditure. The estimated expenditure for FY 1970-71 is Rs. 450 million. Besides, if the proposed reforms in the administrative machinery materialize thereby making it more organized and systematic, the chances of successfully implementing the increasing number of projects will improve. A detailed statement of the resources available, from both domestic and external sources, to meet the specified expenses in the public sector has been given in the chapter dealing with 'Financial Resources'.

Expenditure in Panchayat Sector:

Panchayats of various levels shall play a significant role in the planned development of the country. Since no estimates have yet been made of the availability of local resources in the panchayat sector or the required amounts to be provided as grant from the centre, and since no evaluation of work done in this sector has been made, an analysis based upon available data and facts, has been presented. This should help formulate a guideline for the panchayat sector. Accordingly, the total amount (including the development grant and the village and district resources) is Rs. 21.9 million in FY 1966-67 and Rs. 30.3 million in 1967-68. Local resources alone amounted to Rs. 17.0 million in 1966-67 and Rs. 26.2 million in 1967-68. If the resources utilized by the village panchayats in the local development projects implemented by local resources alone is considered, the actual amounts seem to be higher.

In order to make the panchayat sector better organized, effective and dynamic, provisions have been made to increase the current amount of central development grants and to provide these grants in definite proportion to particular local projects. Intending to utilize more local resour-

ces as a result of such provision, the capital investment in panchayat sector during the Plan period is estimated to be Rs. 100 million. This amount will be utilized mainly for the construction of minor irrigation, light transport, drinking water, drainage, school, library and other facilities. During the Plan period, His Majesty's Government will provide development grants of Rs. 20 million to the village panchayats through district panchayats.

Expenditure in Private Sector:

Estimated expenditure in the private sector is Rs. 870 million, of which capital investment will be Rs. 650 million. The Agriculture Development Bank and the Compulsory Savings Corporation shall make available Rs. 475 million as agricultural loans in the private sector. This estimate of the volume of loans is based on the loans issued during the past years and on the cost of agricultural implements required for achieving the targets for agricultural development in the Fourth Plan. Out of the funds available from these corporations, Rs. 280 million shall be spent on seeds, fertilizers, insecticides and other recurring expenditures. Therefore, funds amounting to only Rs. 250 million have been allocated for actual capital investment. No estimate has been made regarding the development expenditure to be met by the private sector from its own resources, although it will obviously exceed the amount stated above.

It is estimated that Rs. 250 million will be invested by the private sector in industry. Nepal Industrial Development Corporation shall make available Rs. 120 million to lend to the private sector. It is assumed that private sector will not only be encouraged but also be able to mobilize and invest its own capital, thereby reaching the figure envisaged for total private sector investment. In view of investment made and experience gained in preceeding years, it is also estimated that private sector investment in transport facilities during the Plan period will amount to Rs. 150 million.

TABLE 4

ALLOCATION OF EXPENDITURES IN PUBLIC SECTOR

		Rs. in Thousand
1. Transoprt and Communications		**1,05,00,00**
Roads and Bridges	81,31,00	
Civil Aviation	16,10,00	
Telecommunications	3,67,50	
Postal Services	32,50	
Nepal Engineering Institute	2,33,00	
Nepal Transport Corporation	26,00	
Royal Nepal Airlines Corporation	1,00,00 1	
2. Agriculture, Land Reform, Irrigation, Forestry and Botany		**66,28,00**

1) Share Capital.

Agri. loan, marketing of Implements and Agriculture	18,69,00		
Procedures	4,61,00	2	
Survey, Land Reform & Land Admn.	9,01,00		
Forestry and Botany	8,08,00		
Irrigation	25,89,00		
3. Industry, Commerce and Electricity			**47,00,00**
Industry	10,85,00	3	
Cottage Industry	2,27,00		
Tourism	50,00		
Geological Survey and Mines	7,45,00		
Electricity	22,53,00		
Hydrology and Meteorology	2,40,00		
Commerce	1,00,00		
4. Panchayat, Education, Health and other Social Services			**37,25,00**
Panchayat	4,10,84	4	
Education	11,97,52		
Health	15,12,36		
Drinking Water	3,72,60		
Housing	1,28,00		
Administrative Reform	25,97		
Information and Broadcasting	77,71		
5. Statistics			**1,47,00**
Grand Total			**2,57,00,00**

2) Includes Rs. 10 million needed to increase the share capital of Agriculture Development Bank.
3) Includes Rs. 10 million needed to increase the share capital of NIDC.
4) Includes development grant of Rs. 20 million to the panchayat sector.

CHAPTER III

FINANCIAL RESOURCES

It has already been stated that out of the total financial resources of Rs. 3540 million required for achieving the goals of the Fourth Plan, His Majesty's Government must provide Rs. 2570 million: i.e. Rs. 2550 million for the development of the public sector and Rs. 20 million for the development of the panchayat sector. Based on potential available resources and the efforts for providing additional resources to meet the minimum requirements of development, the outline of the Plan has been prepared and the goals have been determined accordingly. Therefore, assuming that the government policy of mobilizing resources may change and in fact, recognizing the necessity of changing and improving that policy, the resources which can and should be made available, have been provided in the Fourth Plan. In the foregoing chapter, the available resources for achieving the specified goals in both the private and panchayat sectors have been analyzed, and it has been shown that the required resources will be available.

Public Sector

In the process of economic development it is necessary to think of the maintenance of a fiscal balance between resources and investment as an objective of planning. But, giving due consideration to the minimum requirements, if the available savings for investment is insufficient to accelerate development activities, the possible impact of such an imbalance on the fiscal system should also be considered. But due to a lack of data on the national income and the balance of payments, it is natural that the necessary information on savings and investments is also not available. Therefore, with the view of maintaining a financial balance in the fiscal system on the basis of available data, the estimate of financial resources potentially available for the public sector has been made for the Fourth Plan period.

Estimation of resources which may be available in the public sector during the Fourth Plan period has been based on the following factors: changes in the government revenue and regular expenditure during preceeding years; the possible changes in the future; assumptions concerning the proper utilization of foreign exchange; projected national and foreign credits; and the level of deficit financing which can be tolerated without

adversely effecting the fiscal system by increasing the politically practical tax burden. In accordance with the long-term ojbectives of accelerating development activities and gradually reducing the dependence upon foreign aid, efforts are being made to reduce the foreign aid ratio in the Fourth Plan. Following is a summary of the resources:

TABLE 5

RESOURCES FOR FOURTH PLAN

Sources	Rs. in million	Percentage
INTERNAL	**1080**	**42.0**
a. Revenue Surplus	330	12.8
b. Additional Revenue from the tax changed	300	11.7
c. Domestic Credit	150	5.8
d. Deficit Financing	200	7.8
e. Deficit	100	3.9
EXTERNAL	**1490**	**58.0**
f. Aid	1290	50.2
g. Loan	200	7.8
Total	2570	100.0

a. Revenue surplus: The estimated revenue of Rs. 430 million for the FY 1969-70 shows an annual increase of 5 per cent in revenue during the Fourth Plan period. On the assumption of an annual increase of 10 per cent in regular expenditures, a revenue surplus of Rs. 330 million will become available for the Fourth Plan.

During the seven years between FY 1963-64 to FY 1969-70 total revenue increased at the rate of 19 per cent per annum. Such a significant increase was made possible primarily because of periodic increases in various taxes and not because of improved tax administration. The development of the general fiscal system has also helped increase revenue. As such, while estimating the rate of increase in future revenue separate analysis should be made of the development of the fiscal system and of the increases in the rate of taxation in order to determine their relative importance in the overall increase in revenue.

During the above mentioned seven years, the impact of development itself is responsible for no more than an annual 8 per cent increase in revenue. In fact, the increase in prices during that period seems to be a contributing factor to the increased revenue. Assuming fixed prices, it seems that general development has contributed to the increased revenue by 4 percent annually. Therefore, considering the estimated revenue of Rs. 430 million in FY 1969-70, the increase in revenue during the Fourth Plan period will be 5 per cent per annum, assuming fixed prices. When viewed from the experience of past years, such an increase seems

optimistic. There are several factors which might reduce the increase of revenue to less than 5 per cent. While difficult to quantify, some of these factors are: (1) while considering the price index for agricultural production in India, the export sector cannot make its complete contribution to the national income of Nepal, and thereby creates possible difficulties in increasing revenue form other sectors. (2) In the same way, increases in revenue are adversely affected by regulations concerning the gift parcel system. However, the favourable impact of economic development on revenue resulting from the proposed increases in investment during the Fourth Plan period should also be considered.

At the recommendation of the National Planning Commission, the Finance Ministry will adopt a new classification of regular and development expenditures. According to the new classification system, some of the amounts under the development budget heads will come under regular budget heads. The difference between the current system and the new classification system may be shown on the basis of FY 1968-69.

TABLE 6

FY 1968-69 BUDGET ACCORDING TO NEW CLASSIFICATION

(Rs. in million)

Item	Current Classification	New Classification
Regular Budget	**209.0**	**314.0**
a. Recurring Expenditure	201.9	269.5
b. Loan Payment	7.1	44.5
Development Budget	**458.4**	**353.4**
a. Recurring Expenditure	67.6	—
b. Loan Payment	37.4	—
c. Development Expenditure	353.4	353.4
Total	667.4	667.4

According to the prevailing prices, regular expenditures seem to hai increased by 12-13 per cent per annum during the seven year period from FY 1963-64 to FY 1969-70. But according to the fixed prices of FY 1963-64, the increase has been only 10 per cent. According to the fixed prices of FY 1969-70, it is estimated that regular expenditures shall increase by 10 percent during the Fourth Plan period. To achieve this, emphasis should be given to administrative efficiency and frugality. Generally, salaries and allowances constitute the largest share of regular expenditure. Based on the statements given above, total revenue shall be Rs. 2,490 million and total regular expenditure shall be 2,160 million during the Fourth Plan period. Accordingly, a surplus revenue of Rs. 330 million shall be available for the Fourth Plan.

b. Additional revenue from the tax changed: Increases in revenue, due to changes in the rate of the prevailing taxes, may be more difficult to achieve

during the Fourth Plan period than during the Third Plan. Because of increases in custom duties, income tax and sales tax during recent years, the opportunity for increasing revenue by changing the rate of taxation seems very limited. If the minimum resources required for development were not made available through internal resources (by changing existing rates of taxation and by making tax administration more efficient), it is clear that the pace of development would be affected adversely and Nepal's dependency upon foreign aid would increase. From economic and technical points of view, agriculture may make a great contribution to increase revenue. However, the current land tax system should be changed scientifically in order to make it just. The working efficiency of government-owned industrial, financial and business institutions should be improved and operated more frugally, thereby contributing to increases in revenue. Therefore, along with the changes in the prevailing rate of taxation and improvements in tax administration, the earnings, from better operated government-owned corporations, will be Rs. 300 million, which will also be available for the Fourth Plan.

c. Domestic credit: When compared to the Rs. 59 million collected during the Third Plan period, Rs. 150 million should be collected during the Fourth Plan period. Considering the present situation of financial institutions in the public sector (like commercial banks, insurance corporation, provident fund etc.), it seems possible to collect Rs. 150 million or more from the domestic loan. It is not the collection of the loan, but the extent to which government can bear the burden of future credit and the expenditure required to provide resources from other sources in comparision to domestic credit which are the factors determining the quantity of domestic credit. The study of savings which can be invested at present reveals that the terms and interest of the prevailing loans have made domestic credit relatively more expensive from the government viewpoint. Consideration should be given to provide resources from deficit financing instead of domestic credit. Although the possibility of providing development funds from deficit financing is limited, such provision, within certain limits, can reduce government liabilities to a great extent.

d. Deficit financing: In order to mobilize resources for development of the public sector during the Fourth Plan, Rs. 200 million of deficit financing is projected. It will cause no imbalance in the financial system, and will, therefore, create no adverse effect. Assuming a general balance of the resources required and available in the private sector, the situation of the fiscal system shall have been determined from the resources and this will be available in the public sector. In fact, the study on savings in commercial banks and other government institutions reveal that more resources have become available in the private sector. So, if the expenses in the public sector were to be met through revenue and domestic loan, one should agree that financial balance has existed likewise and one should agree on the balancing nature of the investment through foreign aid available in the form of goods or in services. Now, considering the optimum relation that should exist between savings and investment, the extent of investment by deficit financing has to be determined. The result of the investment by

deficit financing, the adverse impact on the price and the balance of payment of the country has generally determined the limit of deficit financing. Deficit financing is one of the numerous causes of inflation. As the proposed deficit financing will reduce the reserve of convertible foreign exchange and will be spent at the same ratio for importing physical resources for development, there is no possibility that adverse effect on the internal price situation will be caused.

One of the main causes of monetary inflation during the past years has been the contineous increase in foreign exchange reserves. Based on the foreign exchange earning during the past years, the foreign exchange expected to be earned during the Fourth Plan period, the current savings, the quantity of the resources available from domestic sources, the minimum saving of foreign exchange required to increase foreign trade, the quantity of convertible foreign exchange in relation to the money supply, and the quantity of foreign exchange required for the development works in the public sectors during the Fourth Plan, the proposed deficit of Rs. 200 million is necessary to accelerate development activities.

e. Deficit: The resources available from domestic source for operating various development projects show a deficit of Rs. 100 million. This deficit shall be met by the saving of the foreign exchange, if possible. The estimates of resources reveal that the present saving of foreign currency is more than future requirements. However, the above saving can be spent only when foreign currency is in deficit. Otherwise, the required amount will have to be collected by the mobilisation of domestic resources.

f. Foreign aid: During the Third Plan period, foreign aid amounted to Rs. 950 million including both loans and grants. The following table shows the actual amount received during the first three years of the Third Plan, the revised amount during the fourth year, and the estimated amount of the fifth year. The estimate of foreign aid during FY 1969-70 is considerably higher than in FY 1968-69. However, the actual amount seems not to have increased more than Rs. 270 million.

TABLE 7

FOREIGN AID DURING THIRD PLAN

(Rs. in million)

Foreign Aid Type	Actual 1965-66	Actual 1966-67	Actual 1967-68	Revised 1968-69	Estimated 1969-70	Total
Grant	175.3	142.2	158.1	214.2	329.2	1019.0
Loan	3.3	3.7	—	—	12.5	19.5
Total	**178.6**	**145.9**	**158.1**	**214.2**	**341.7**	**1038.5**

It is difficult to estimate beforehand the amount of expected foreign aid for the Fourth Plan. However, considering the experiences gained during the Third Plan period, the type of projects to be operated during the Fourth Plan period, and the quantity of domestic resources available for local expenses, estimated foreign aid for the Fourth Plan is expected to total Rs. 1,490 million; Rs. 1,290 million in the form of grants and Rs. 200 million as loans.

The following table shows the amount to be provided by HMG for regular and development expenditures and the sources of each during the Forth Plan period. The table gives a clear picture of the complete financial situation of the public sector and the relation between expenditure and resources during the Fourth Plan period:

TABLE 8

PUBLIC SECTOR EXPENDITURE AND SOURCES OF RESOURCES DURING FOURTH PLAN PERIOD

Item	Rupees in million	Percentage
Expenditure		
a. Regular	2160	45.7
b. Development	2570	54.3
Total.	**4730**	**100.0**
Sources:		
Internal	**3240**	**68.5**
a. Revenue	2790	59.0
b. Domestic Loan	150	3.2
c. Deficit Financing	200	4.2
d. Deficit	100	2.1
External	**1490**	**31.5**
a. Grant	1290	27.3
b. Loan	200	4.2
Total	**4730**	**100.0**

CHAPTER IV

POPULATION AND MANPOWER

The Growth in Population

The first census of the Kingdom of Nepal was taken in the year 1911. Although an increase of only 3,841,650 persons or 68.12 per cent has been observed during the period between 1911 and 1961, this small increase might well be the result of the various natural calamities, the two world wars and the political upheaval in the country. The average annual rate of growth during the period between 1954 and 1961 has been found to be 1.6 per cent. However, the statistics of births and deaths made available from the census of 1961 show a growth rate of 2.0 per cent per annum. Though data on births and deaths (during a year preceding the census) were collected during the census of 1961, neither set of figures is reliable. The data on deaths seem particularly less reliable than on births. The total population recorded in the various censuses is shown in the table below:

TABLE 9

TOTAL POPULATION FROM DIFFERENT CENSUSES

Years	Total Population
1911	5,638,749
1920	5,573,788
1930	5,532,574
1941	6,283,649
1952/54	8,473,478
1961	9,412,996

Estimated Population

In the absence of the necessary reliable statistics of births and deaths, it is not easy to make population projections. It is possible to formulate informative and reliable estimates of national population trends only when reliable statistics of births and deaths and knowledge of the possible results of existing programmes effecting births and deaths are available. Due to a partial lack of the necessary information, it is natural to encounter difficulty in making a scientific study analysing the po-

pulation. However, estimates of the future population for the period between 1961 to 1981 have been prepared on the basis of the available statistics and assuming that the sex-age-adjusted birth rate of 40 per thousand will remain constant throughout the period of projection and that due to a decline in the death rate there will be an annual increase of 0.5 year in life expectancy. The expectation of life was estimated by comparing the age-specific death rates obtained from the census of 1961 and the population survey of 1963 to the age-specific death rates given in the United Nation's Model Life-Tables. The estimated population thus obtained is given in Table 10.

TABLE 10

ESTIMATED POPULATION PROJECTION FOR NEPAL

1961—1981*

Years / Age Groups	1961	1966	1971	1976	1981
All Ages	9412996	10276533	11247616	12392794	13777262
0— 4	1487784	1561932	1668313	1847095	2097462
5 —9	1264094	1354102	1437517	1550438	1731917
10—14	1059931	1228212	1320190	1405755	1520365
15—19	857303	1029778	1197046	1290299	1377507
20—24	791467	822975	992689	1158273	1252946
25—29	772523	753025	787141	954042	1117967
30—34	668445	731882	717778	754440	918850
35—39	580789	630163	693829	685495	724374
40—44	472744	543289	594216	658729	654675
45—49	394943	436637	506293	558227	622938
50—54	327437	357586	399430	467257	519471
55—59	257449	287806	318130	359153	424042
60—64	196969	216239	245210	274618	313532
65—69	132222	154113	172121	198252	228254
70—74	88407	92492	110193	125511	147177
75—79	42838	52099	56066	68574	79955
80—84	14440	19581	24726	27564	34811
85—over	3211	4622	6678	9072	11019

Estimated Population Growth

From the above Table, the population is expected to increase by 863,537; 971,083; 1,145,178 and 1,384,468 respectively each quinquennium beginning in 1961. In other words, the annual rate of population growth for different periods will be as follow:

Period	Annual rate of growth
1961-1966	1.78 per cent
1966-1971	1.81 per cent
1971-1976	1.95 per cent
1976-1981	2.14 per cent

* The projection includes both sex.

A difference has been observed between the rates of population growth shown in the above Table and those given in the Population and Manpower Chapter in the Third Plan. This difference is due to the different methods employed in estimating future population. In the population chapter of the Third Plan, a very simple growth pattern for each quinquennium was assumed and then from the estimated total population, age composition figure (i. e. 0-14 years; 15-59 years and 60 years and over) were estimated. The present estimate, obtained by the Cohort Survival Method after a detailed analytical study of the available data on births and deaths, is definitely more reliable.

The Age Composition of the Estimated Population

It requires special efforts, followed by a time-lag, to reduce the birth rate. However, reductions in the death rate are achieved comparetively easily due to increasing knowledge of the various preventive measures and to increasing availablility of the new scientific methods of medical care and facilities. As such, in a developing country like ours, the number of children aged 0-14 years constitute more than 40 per cent of the total population, while persons aged 60 years and over are around 5-6 per cent. The number of persons in the working age 15-59 years is around 54-55 per cent. This population structure is being experienced by neighbouring countries as well. The following Table shows the percentage distribution of the population by broad age-groups.

TABLE 11

PERCENTAGE DISTRIBUTION OF THE POPULATION BY AGE GROUP

Age	1961	1966	1971	1976	1981
All Ages	100.0	100.0	100.0	100.0	100.0
0—14	40.5	40.3	39.4	38.8	38.7
15—59	54.4	54.4	55.1	55.5	55.4
60 and over	5.1	5.3	5.5	5.7	5.9

It is obvious from the above Table that as a result of an almost constant birth rate and a steadily declining death rate, the emergent quasi-stable population explicitly needs to reduce its birth rate in order to increase the percentage of the population in the working age group and hence reduce the percentage of population dependent upon others for their livelihood. But as has been stated above, any reduction in the birth rate require special efforts and a longer time. In spite of a Herculean effort, the birth rate tends toward neither its possible minimum nor its possible maximum. The birth rate of any country and of any time period is an expression of the culture of that particular population, tending towards a level which represents a balance of conditions that affect it both in a positive and negative sense.

Thus, to bring a substantial change in the birth rate, he initial requisites are to bring required changes in the economic and social conditions, cultural patterns and aspiration towards life of the common man. The second need is to create an institution such as the family planning

programme, which can sufficiently consolidate the successes brought through the above mentioned changes.

Population density increases with the growth of population. Specifically, the density of population in Nepal is 173.2 persons per square mile. With regard to the physical geography, the amount of habitable land and the amount of land under cultivation in Nepal, the density of population seems to be quite high. The estimated density of population in various years is shown in the Table below:

TABLE 12

POPULATION DENSITY PER SQUARE MILE 1961-1981

Year	Population Density (per Square mile)
1961	173.2
1966	189.1
1971	207.0
1976	228.0
1981	253.5

From the above Table, the population density of Nepal in the year 1961 was 173.2 persons per square mile and it is estimated that it will reach 253.5 persons per square mile in the year 1981. The estimated population density of the various regions is given in the Table below:

TABLE 13

POPULATION DENSITY PER SQUARE MILE BY REGIONS 1961—1981

Region	1961	1966	1971	1976	1981
Nepal	**173.2**	**189.1**	**207.0**	**228.0**	**253.5**
Eastern Hills	186.5	203.2	222.4	245.1	262.4
Eastern Inner Terai	105.9	118.0	129.1	142.3	158.3
Eastern Terai	432.3	472.1	516.8	569.4	622.1
Kathmandu Valley	2110.0	2309.9	2528.1	2785.5	3096.7
Western Hills	152.9	166.5	182.9	201.5	224.0
Far Western Hills	99.6	108.5	118.8	131.8	145.4
Central Inner Terai	169.0	184.9	202.4	223.0	247.9
Western Terai	306.3	330.2	361.4	398.2	442.7
Western Inner Terai	138.1	158.3	173.3	191.9	212.3
Far Western Terai	95.5	104.8	114.7	126.4	141.5

From the above Table, the population densities of the Inner Terai region and the Western Terai region are found to be less in comparison with other regions. The density of population of Kathmandu Valley is very high in comparison with other regions. The capital of the country and the two main cities viz. Lalitpur and Bhaktapur are situated in this region, and it is natural that the density of population of this region would be higher than that of the other regions. At the same time, it is obvious that it will be more and more difficult to arrange necessary social and economical in-

frastructure (such as education, health, housing, culture and recreation) because of the increase in population. It seems desirable to launch a programme resettling some people from the highly densely populated region to the less densely populated regions, especially to the Far Western and Inner Terai regions.

As has been stated above, facilities like education, healths, housing etc. and employment opportunities in various economically developed fields would be more difficult to provide with a high rate of growth in population. In comparison with the population of 1961, 2.5 million more people would be added to the 15-59 age group by 1981. According to the prevailing economic conditions, there would be a substantial pressure of population on the land. To decrease this pressure, new lands should be opened for cultivation, and job opportunities should be created in the non-agricultural sector. Even if the present standard of consumption were to be maintained, there would have to be a substantial growth in production.

If the estimated growth of population were to take place as mentioned above, it would be more and more difficult to fulfill the increasing needs in the field of education. In comparison with the year 1961, the number of children of school-age 6-11 years in the primary level would increase by 41,119 and the number of children of school-age in the middle level would increase by 25 per cent more and the more number in higher education would increase by 39 per cent in 1981.

As shown by the census, in the year 1961, 48.5 per cent of the total population and 80.45 per cent of the working age group 15-59 are the only ones who are economically active. In the near future, a substantial growth in the economically active population should not be expected. There should be ample opportunities for work in various new fields which should provide for a substantial growth of the labour force. The development of industries and occupations giving opportunities to housewives and students would allow them to become economically active, and therefore encourage the growth of the economically active population. Another interesting fact revealed by the population census of 1961 was the level of employment in agriculture. Out of the total economically active population of 4,306,839, 4,040,607 are engaged in agricultural work. The census also showed that 30,365 are employing others, 3,193,207 are working for themselves, and 263,934 are working as unpaid family workers. Thus it is clearly shown that, although agriculture is the major occupation, it has not developed into a commercial industry and has instead retained its subsistence nature.

Position in the Fourth Plan

On the basis of the above analysis, the influences of various population groups expected during the Fourth Plan can be studied. The age-group distribution of the population during the Fourth Plan is shown in the Table below:

TABLE 14

DISTRIBUTION OF THE POPULATION BY AGE GROUP

Age Groups		0—4	5—14	15—19	60—	Total
1970	Number	1,650,520	2,724,351	1,071,790	600,992	11,047,653
	Percentage	14.94	24.66	54.66	5.44	100.00
1975	Number	1,809,992	2,921,028	6,736,720	688,016	12,155,756
	Percentage	14.89	24.03	55.42	5.66	100.00

According to this Table, there is an increment of 196,677 children of school-going age (5 — 14 age group) during the Fourth Plan. At the end of the Third Plan, only 35 per cent of the children in this group had an opportunity to go to school. If the opportunity to receive an education were to be made available to the additional number of children only, the total would be only 39.37 per cent in the current Plan. Judging from this information, the target of education, especially in the primary and middle levels, should be increased substantially.

During the next five years, there should be an increase of 664,930 individuals in the labour force (the 15—59 age groups). It will be essential to create jobs for about 525,000 persons within this economically active group during the Fourth Plan period. If not, the rate of employment will be even lower than during the Third Plan. In this estimate, the number of individuals who are under 15 and over 59 years have not been included although they might actually be employed. In order to increase productivity in the labour force, this practice will be discouraged. Gradually the work done by people outside of the 15-59 age group will be taken over by the new labourers. If this were not done, the number of persons looking for jobs would continue to increase and would be higher than the above mentioned number.

Also, if an ambitious plan could be formulated to activate the 1.14 million unemployed persons by the end of the Third Plan period, the number of persons depending on others for their subsistence would decrease and the standard of living of general people would actually increase.

Industrial classification of the labour force shows the degree of dependency of the population upon different industries, as well as being a main measuring device to determine how much the country has developed. According to the national census taken in the year 1961, the economically active population was about 4.6 million, of which 93.83 per cent were dependent upon agriculture. Only 6.17 per cent were employed in other sectors of the economy. No reliable statistics have yet been collected which can indicate the extent of change brought to the employment structure by economic development during the past nine years. As a result, the percentage of people who have shifted from agriculture to other industries is not known. Although reliable statistics on this question should be available from the national census to be held in 1971, there is little reason to believe that there has been any remarkable change in the industrial distribution of the labour force. This is because of the underdeveloped nature of the country and the fact that the rate of economic development has been minimal.

Although it is likely that increased investment during the Fourth Plan period will result in effective utilization of the agricultural labour force, there is little likelihood that the desired change in the industrial structure of the non-agricultural sector will occur.

Technical Manpower:

At the base year of the Fourth Plan (1969-70), the number of highly trained persons (graduates) in the technical and scientific fields such as engineering, health, education and commerce is estimated to be 2,897. The number of graduates in both technical and non-technical fields is estimated to be 7,648. Also, even those who complete their studies during the Plan period should be considered. Their number is expected to reach 2,364 by the fourth year of the Fourth Plan. The breakdown of the estimate is given in the following Table.

TABLE 15

ESTIMATE ON HIGH LEVEL TECHNICAL MANPOWER

Subject	Number expected in 1969-70	To be added during 1969-70 to 1973-74	Total
Engineering	465	306	771
Electrical Engineering	81	30	111
Civil Engineering	260	141	401
Mechanical Engineering	57	51	108
Other Engineerings	67	84	151
Health	326	134	460
Education	240	68	308
Commerce	730	264	994
Agriculture	265	240	505
Forest	99	20	119
Veterinary	45	20	65
General Science	727	288	1,015
Art Subjects	4,751	1,024	5,775
Total	7,648	2,364	10,012

During the last Plan period, several technical and vocational training centres were opened in order to provide middle and lower level technical training facilities within the country. The total number of middle and lower level technical persons during this period is estimated to be 5,094. This includes the number of persons already trained by these institutions and the number of persons to complete training in the year 1969-70, assuming that the number of trainees remains at the same level as in the past. Since training such manpower requires a maximum of three years, training facilities will be made available during the Fourth Plan period according to the number required. The number of trained persons as of 1969-70 can be classified into the following groups:

TABLE 16

MIDDLE AND LOWER LEVEL MANPOWER AS OF 1969-1970

Subject	Middle-Level	Lower-Level
Civil Engineering (Overseers)	432	—
Mechanical Engineering	—	372
Electrical Engineering	—	150
Chemical and Related Technologies	—	216
Wood Working Technology	—	419
Weaving, Garments, Foot-wear and Textile Technology	—	739
Agriculture	—	1,637
Forestry	231	360
Health	98	286
Home Science	—	154
Total	**761**	**4,333**

Some 1,000 Nepalese have received miscellaneous vocational and technical training during their service with the British-Gurkha Army which will also help to fulfil the need for technically trained manpower.

The above description does not give us a very positive picture of the ratio between the higher level and the middle and lower level technically trained persons available in the country. The number of lower and middle level trained persons is not adequate to help the higher level personnel function most effectively. This shows the need to put greater emphasis on the training of middle and lower level manpower. In the training centres of the country, duplication in training subjects, oversupply in certain trades, and scarcity in some others have also been evident. Thus, during the Fourth Plan period, efforts must be made to coordinate the training of personnel with the requirements for skilled manpower.

In the health sector, the number of specialized doctors and well-trained nurses falls short of those required. However, the number of indigenous health workers (i. e. Kabiraj, Vaidyas etc.) could be fully mobilized, thereby increasing the number of facilities in the health services. The number of such indigenous health workers in the country is estimated to be around 200 at the present time.

In the absence of some basic information, it was not possible to estimate scientifically the required technical manpower for the Fourth Plan period. Since higher level personnel require six to seven years of training, only those undergoing training at present will be available during the Fourth Plan period. If the higher level manpower available were to be used as a base, the number of middle and lower level persons required during the Plan period would be as follows:

TABLE 17

ESTIMATED MANPOWER REQUIREMENT DURING THE FOURTH PLAN PERIOD

Subject	Available Higher Level Manpower	Middle Level Manpower			Skilled (Lower Level) Manpower
		Required	Available	Deficient	
Engineering:	771	2313	1079	1234	34695
Civil	401	1203	635	568	
Mechanical	108	324	324	—	
Electrical	111	333	120	213	
Others	151	453	—	453	
Health	460	920	322	598	1840
Education	308	—	—	—	—
Commerce	994	—	—	—	—
Agriculture	505	800	—	—	3200
Forest	119	288	288	—	380
Veterinary	65	130	—	—	260

Training

The first important goal to keep in mind when considering training during the Plan period is the elimination of duplication in training facilities. Expansion of such facilities should arise only in subjects which have been found to be absolutely essential. Experience in preceeding years has shown that, when training was given in vocations with little demand, the trained persons remained unemployed and consequently caused a loss to the national wealth. Such wastage should be eliminated as soon as possible.

To date higher level technical personnel have been trained outside the country under foreign assistance. In view of long term requirements, such training facilities should be made available within the country. A medical college and an engineering college will be established during the Fourth Plan period. Graduates from these institutions can be utilized during the Fifth Plan period. In important vocations, facilities for the training of middle and lower level technical manpower will be expanded whenever necessary. However, the opening of new institutions will not be encouraged until a through study has been made regarding the types of manpower required and the means to fulfill these demands. Since on-the-job training of skilled workers and upgrading training programmes are more effective, such programmes will be implemented wherever necessary.

Employment

The employment of the labour force is a vital factor in a developmental plan. The main objective of economic planning should include the provision of employment opportunities to those looking for employment. According to the latest estimate, the number of persons of working age,

survey, it is difficult to ascertain the total unemployed population in the country. Since Nepal is basically an agricultural economy, it is natural that under-employment is visible everywhere as it is in other predominently agricultural economies. Disguised unemployment is also visible in several areas. In the field of trained manpower, those who have received technical training have been able to find employment. However, surveys and studies have indicated that persons having non-technical or arts education are finding it increasingly difficult to find suitable employment. Among the educated, the number of persons looking for non-technical jobs has increased tremendously.

More suitable jobs will be required during the Fourth Plan period for the additional population that will join the labour force. Since most of the population is dependent upon agriculture for its livelihood, there is much under-employment in the country.

If sufficient employment opportunities cannot be created for the increased labour force in the non-agricultural sectors, the unemployment problem might take an unpleasent trend. In view of constant progress in the field of education, the number of eduacated persons is expected to increase greatly. In view of this, it is essential that arrangements be made to provide the educated manpower with ample job opportunities. Keeping these facts in mind, all possible attempts will be made to create and expand employment opportunities in all economic sectors in hopes of solving the problem of unemployment and under-employment during the Fourth Plan period.

PART II

CHAPTER V

AGRICULTURE

In the existing condition of the economy agricultural sector should play an important role consistence with the underlying objectives of the Fourth Plan to maximize output by concentrating available resources and creating basic conditions necessary for acceleration of economic development in the country. With the existing structure of our economy, it is true that this requires a heavy emphasis on agriculture. As a matter of fact, in an economy which is still in the initial stage of development, economic progress depends to a large extent on the development of agriculture. Moreover, the rapid development of agriculure has become even more essential in order to lay down a sound base for further expansion of the non-agricultural sector during the long-run process of development.

Although a number of development works have been undertaken in different sectors of the economy, there has been virtually no noteworthy change in the basic condition of agriculture. According to an estimate for 1967/68, agriculture accounts for 66 per cent of the Gross Domestic Product. It is estimated that more than 93 per cent of the total labour force of the country is engaged in agriculture. Besides, agricultural products are the major items in the export trade of the country. Of total exports, food grains alone constitute about 70 per cent. In spite of being predominantly an agricultural counry, the level of land productivity is low. In addition, increased population is exerting heavy pressure on cultivated land, consequently giving rise to the critical problem of providing gainful employment to the growing labour force in agriculture. Under these circumstances emphasis needs to be given to transforming the tradition bound and largely monsoon based subsistence agriculture into a modern and commercial enterprise.

It is necessary to recognise that the farmers play a predominant role in attaining the goals of agricultural development. Although the over-all targets of the agricultural programme are determined by the government, their fulfilment essentially depends on the contribution of all the farmers and families who are engaged in agriculture. The availabity of basic agricultural inputs and services on the one hand and a just reward for their efforts on the other should be guaranteed to the farmers only in this context can the agricultural development programmes undertaken by the government be meaningful.

Progress in the Agricultural Sector

Agricultural development has been emphasised by the government since the First Plan period. As a result, adaptive research suited to the varied climatic conditions of the country has been conducted in different fields of agriculture. Results of that research found appropriate for adoption is disseminated to the farmers through the agricultural extension programme. In addition, a nation-wide land reform programme has been implemented during the Second Plan period in order to bring about institutional changes in traditional agriculture. It is only in the Third Plan that the targets and programme of agricultural development have been fixed at the national level.

Agricultural development was accorded topmost priority in the Third Plan. It was envisaged in this Plan to increase production of food grains by 15 per cent and production of cash crops by 73 per cent. Accordingly production of food grains was to be increased from the estimated production of 3.27 million metric ton in 1964/65 to 3.77 million metric ton in 1969/70 and that of cash crops from 0.25 million metric ton to 0.39 million metric ton. In order to accomplish these targets, the need for improving farm practices has been stressed; and accordingly, programmes for increasing the use of inputs like improved seeds, chemical fertilizer, pesticides and irrigation were incorporated into the Plan. A review of progress made in the four years of the Plan period shows that the production of food grains has increased by only 10 per cent. Looking at individual crops, the food grain production of wheat is far behind the target and all cash crops (except oil-seeds production) are far short of the targets. Production targets of different crops and progress made in the first four years of the Third Plan period are shown in the following Table:

TABLE 18

TARGETS OF AGRICULTURAL PRODUCTION AND PROGRESS

(In thousand metric Tons)

Crops	Target of the Third Plan 1964/65	Target of the Third Plan 1969/70	1965/66	1966/67	1967/68	1968/69	% Increase	% of targets
Food grains	**3270**	**3776**	**3358**	**3138**	**3420**	**3598**	**10.03**	**61.8**
Paddy	2201	2368	2007	2007	2217	2322	5.45	72.5
Maize	854	918	856	824	875	900	5.39	71.9
Wheat & Barley	152	425	175	187	216	256	68.42	38.0
Millet & Others	63	65	120	120	112	120	84.62	—
Cash Crops								
Sugarcane	126	252	192	147	167	188	49.21	49.2
Oil-seeds	51	60	51	56	56	57	11.37	66.6
Tobacco	9	24	8.8	5.2	5.4	6.3	—30.00	—
Jute	38	54	39	38.4	39.4	N.A.	—	—

It is clear from the above Table that the basic target of the Third Plan to increase production of food grains by 15 per cent will remain unfulfiled. This shortfall in production of food grains and otehr crops is mainly due to the absence of adequate organizational effort and necessary inputs. According to progress made during the last four years, the area utilizing improved seeds is only 13 per cent of the targeted area and the use of chemical fertilizer is about 17 per cent of the target of the Third Plan. Similarly, progress in the field of irrigation is much below the target. Targets of various inputs in the Third Plan and progress made in the past four years are shown in the Table below:

TABLE 19

TARGETS OF AGRICULTURAL INPUTS AND PROGRESS

Programmes	Units	Target of the 3rd Plan	1965-66	1966-67	1967-68	1968-69	% of target
1. Area under							
improved seeds	Hec.	800,000	10754	25993	57303	102630	13.0
Paddy	"		6331	13493	26068	42552	
Wheat	"		4326	11371	28027	53775	
Maize	"		97	1209	3208	6303	
2. Use of chemical fertilizers (gross)	M.T.	221,000	3169	6670	16000	24000	17.0
3. Irrigation	Hec	148,000	6000	25000	12850	15240	39.9
4. Reclaimed land	"	13,900	804	2801	3873	4931	35.5
5. Resettled families	No.	6,000	800	1378	1913	1936	32.3

Targets of the Third Plan in the field of livestock and horticulture development and progress made in the last four years are shown in the Table below:

TABLE 20

DISTRIBUTIONAL TARGETS OF LIVESTOCK AND HORTICULTURE PRODUCTION & PROGRESS

Programmes	Distributional Target	Progress from 1965-66 to 1968-69	Percentage of the target
Pigs	12,756 (improved breeds)	1,040	8.15
Sheep	3,000 lambs	48	1.6
Poultry	1,100,000 chicken	193,577	17.59
Fish	1,250,000 fingerlings	1,239,241	99.14
Fruits	760,000 root-stock	602,676	79.26
Vegetables	29,100,000 seedlings	209,750	0.72

Keeping in view the needs of agricultural development, several departments have been established in different fields of agriculture in order to conduct adaptive research which is suitable in different climatic conditions of the country, on improved seeds of various crops, on livestock, and on fisheries, etc. and also to produce these inputs and make them available to a large number of farmers on easy terms. Under these departments there are at present 4 Agricultural Research Stations, 4 Agronomy Farms, 23 Horticulture Development Centres, 4 Livestock Development Farms, 3 Poultry Hatcheries, 34 veterinary Hospitals and Dispensaries, 3 Cheese Factories, 1 Dairy Centre and 10 Fishery Centres located in different parts of the country. With an aim of establishing a close link between agricultural research and farmers, an agriculture extension programme is being implemented under the supervision of graduate level Agriculture Development Officers posted in 43 out of 75 districts. In the field of training during the last four years, more than 800 J.T.As. have been trained and 1870 farmers have received practical training. An Agriculture College has been established to train higher level agricultural techniciahs inside the country. In addition, the Agricultural Development Bank, Land Reform Savings Corporation and Agricultural Supply Corporation have been established in order to provide credit, fertilizers, seeds, implements and other inputs to the farmers. A Dairy Development Corporation has also been established to run the dairy enterprise along business lines. A Minor Irrigation Department with the objective of developing irrigation facilities according to the needs of the agricultural development programme has been established in the Ministry of Agriculture.

A perusal of the progress made so far in the development of agriculture and its present status shows that the use of such high yielding inputs as improved seeds and fertilizer and the provision of irrigation facilities are at a very low level. Out of 1,345,000 hectares of cultivated land, improved seeds have been used in only 102,630 hectares, and the annual use of chemical fertilizer has amounted to gross 24,000 metric ton. Similarly, irrigation facilities have been provided to 117,500 hectares which is only 6 percent of the total cultivated land. Furthermore, this includes minor irrigation from which it is naturally doubtful that permanent irrigation facilities will evolve. Although in the last four years institutional reforms have been introduced and at the same time several institutions have been established in the agricultural sector, much remains to be done to make them more effective.

Present Obstacles and constraints

The agricultural development programme is at present beset by the following obstacles and constraints:

(a) There is no firm support for augmenting production by means of identifying improved seeds of agricultural crops that are suitable for adoption in different climatic conditions of the country, producing them on an experimental basis for a given period of time, and supplying them to the farmers in an extensive way.

(b) Allocated budgets are not efficiently utilized due to the absence of a well-organised administrative machinery. There is a need for the timely release of funds and the allocation of personnel on the basis of the approved programme.

(c) At the Centre, there are separate departments looking after different activities in agriculture, but iner-departmental coordination and co-operation need to be mutually reinforcing. Similarly, at the district level each department has its own administrative offices. Even in a single agricultural station or farm there are separate administrative offices as in the centre. But there is no office which is responsible for coordination, control and supervision. Unless the present organisational set-up is basically changed, it is evident that the programmes envisaged in the Fourth Plan are unlikely to be implemented in an effective way.

(d) At the village level, there is no administrative machinery other than some J.T.As. to look after agricultural extension and other development works. As a result, necessary inputs and services are not funnelled effectively from the centre to the village level and made available to the farmers. In fact, the underlying objective of all the programmes undertaken by the government is to encourage and enable farmers to increase production. It is, however, not unnatural that the agricultural development programme of the government has failed to make its anticipated impact at the village level since there has not been an effective network reaching the farmers.

(e) Projects and activities in agriculture are scattered over many areas, thus preventing projects and activities from being mutually reinforcing. There may be a branch office of the Agriculture Development Bank, but with poor support facilities. There may be an office of the Agriculture Supply Corporation, but with few or poor quality J. T. A's. Research works are confined to the centre or a few farms, and very little research has been adoped to local conditions.

(f) A sense of responsibility is not acquired unless evaluation is based on the ability to implement specified programme in an efficient manner. As the technical personnel have to devote a great deal of time to administrative work, their expertise has not been fruitfully utilized. Similarly, the agricultural extension workers, who work at the village level, are not only inadequate in number, they are also poorly trained, lowly paid, and less experienced.

(g) There is evidently duplication of effort, in the activities of the various government organizations in the field of agriculture. This has caused wastage of resources. None of these organizations have been able to function as an effective agent in the provision of credit and other inputs required for the development of agriculture. There is no system of supervised credit. Even more complex is the problem of collecting loans.

(h) In order to increase agricultural production, it is essential to provide incentives to the actual farmers. To this end there is a need to ensure the availability of agricultural inputs on easy terms and also to fix an appropriate rent ceiling that would permit the actual farmers to receive a large part of the increased production. Moreover, no effort has been made so far to provide marketing and warehousing facilities.

Objectives, Policies and Priorities of Agricultural Development in the Fourth Plan

Objectives:

The agricultural development programme in the Fourth Plan will be geared to attain the following objectives through the maximisation of output. This calls for increasing production of each crop, yields per land area & per capita yields:

(a) To ensure rising levels of consumption;
(b) To provide greater exports;
(c) To supply an adequate amount of industrial raw-materials;
(d) To develop greater purchasing power for a larger segment of the population; and
(e) To generate a capital base for savings and a broader tax base.

Policies:

In accordance with the above mentioned objectives and also on the basis of the present status of the agricultural sector, the policies adopted in the Fourth Plan for the agricultural development are the following:

1. Efforts will be concentrated in a few selected fields so that the limited resources are not scattered thinly over too many projects and over too many lines of production irrespective of their effectiveness. Accordingly the following modus operandi is adopted for the formulation of programmes:

(a) First, the country will be delineated into major agricultural areas according to potential for food grain production, cash crop production, livestock development and dairy products, horticulture production, fishery etc.,
(b) Second, areas or districts for each line of production where concentrated efforts will be made for providing the services and inputs required to achieve the targets in each line of production will be selected.

2. The many activities for agricultural development, like extension, research irrigation etc. undertaken by the concerned departments of the Ministry of Food & Agriculture, will be coordinated and integrated to make them mutually reinforcing. All the departments in the centre will be streamlined to implement the programmes, while at the same time providing a network at the village level. All the extension activities in agriculture will be channelled through one department. Effort will be made to make the villages the central point of all agricultural development programmes.

3. In order to increase agricultural production, it is necessary to make available adequately the numerous services and facilities such as improved seeds, fertilizer, pesticides, tools and implements to the farmers at the village level. With this objective, the programmes of the various agencies such as the Agriculture Development Bank, the Agriculture Supply Corporation, the Land Reform Savings Corporation, and the Cooperative Department will be operated in an integrated way.

4. Since it has become essential to consider measures to solve the problems of marketing, the agricultural development programme will

attempt to develop marketing channels through the reorganised cooperatives. Also, a marketing organisation will be established at the national level. In addition, emphasis will be given to the adoption of an appropriate rent and land tax policy in order to generate additional savings and to broaden the tax base in the agricultural sector.

5. Extensive feasibility studies are required if the goals of promoting agro-based industries and diversifying agriculture are to be achieved. Arrangement will be made to provide the credit and technical assistance required to the landlords for the establishment of these industries. This credit is conditional on the sale of their land to the tillers. Similarly, appropriate programmes will be implemented to increase production of food grains, fruits, vegetables, milk, and other livestock.

6. There are indications that the Terai will face decreasing prices for its grain exports to India. Efforts are urgently required to increase future exports of the Terai surplus to countries other than India. The market should also be extended towards the hills. This is possible only if the purchasing power of the hill people is increased. For these reasons, the policy is to invest in the hills according to the potentiality of agricultural development.

Priorities:

The formulation of the Agricultural Programme under the Fourth Plan consists of specific projects and is designed at the onset to include ongoing projects which have already been started and other projects for which foreign aid has already been ear-marked by agreement. In addition, attention will be given to projects which have already been built but are not operating. Additional investment will have to be included in the programme if such projects are to be made operational. One of the overriding principles in drawing up the programme is the determination of what can be done to maximise the use of present projects, ensuring at the same time a logical linking of both the continuing and new projects.

Agriculture Development Programme in the Fourth Plan

It is necessary to increase the output of cereal and cash crops, as much as possible, to attain the objectives of agricultural development under the Fourth Plan. In addition, the production of fruits, vegetables, meat, milk and eggs has to be increased in order to augment the supply of nutritious food. Keeping this in view, targets of different agricultural products, along with the necessary supply of inputs and departmental programmes, have been fixed for the Plan period and are described below:

1. Cereal Grain:

During the Fourth Plan period, the population of Nepal is projected to increase at the rate of 1.95 per cent per annum. Thus, to meet the increased demands of food grains caused by increases in population and income and in view of the fact that production of cereal grain increased by only 2.5 per cent per annum during the Third Plan period, it is envisaged

in the Fourth Plan to increase the production of cereal grains by 16 per-cent. Accordingly, the average annual increase in production will be 3 per cent. It is estimated that the annual increase in the production of paddy, maize and wheat will be 2 per cent, 1.3 per cent and 14.4 per cent respectively. This target is based upon past progress and future programmes to be implemented during the Fourth Plan period. Production targets of different cereal crops during the Fourth Plan period are shown in the Table below.

TABLE 21

PRODUCTION TARGET OF CEREAL CROPS

(In Thousand Metric Tons)

Crops	Est. production of 1969-70	Target of 1974-75	Per cent increase	Annual growth
1. Paddy	2,353.81	2,598.60	10.40	2.0
2. Maize	918.21	980.17	6.74	1.3
3. Wheat (including barley)	296.59	580.00	95.55	14.4
4. Millet & others	120.00	120.00	0.00	0.0
Total	3,688.61	4,278.77	16.00	3.0

In order to fulfil the target of cereal grain production, efforts will be concentrated on the provision of seeds, fertilizers, irrigation facilities, and agricultural extension to those districts selected on the basis of priority. The selection of districts for the intensive Agriculture Development Programme is based on the following factors:

(a) the availability of irrigation and transport facilities;
(b) provision of organisational units concerned with agricultural development;
(c) potentiality of agricultural development;
(d) regional development; and
(e) facilities of government offices.

Districts selected for Intensive Agricultural Development Programme are as follows:

DISTRICTS SELECTED FOR INTENSIVE AGRICULTURE DEVELOPMENT PROGRAMME

Terai and Inner Terai	Hill and Valley
1. Jhapa	1. Ilam
2. Morang	2. Dhankuta
3. Sunsari	3. Kabhre
4. Saptari	4. Kathmandu
5. Dhanusha	5. Bhaktapur
6. Sarlahi	6. Lalitpur
7. Bara	7. Kaski
8. Parsa	8. Syangja

9. Rautahat
10. Chitwan
11. Makwanpur
12. Nawal-parasi
13. Rupandehi
14. Dang Deukhuri
15. Banke
16. Kailali

9 Tanahu
10. Palpa
11. Doti
12. Dadeldhura

To meet the target of increasing cereal grain production by 16 per-cent during the Fourth Plan period, the estimated contribution of different inputs will be as follows:

TABLE 22

ESTIMATED CONTRIBUTION OF DIFFERENT INPUTS TO ACHIEVE TARGETS OF CEREAL GRAIN PRODUCTION

In Per cent

Crop: Inputs	Paddy	Wheat	Maize	Cereal
1. Chemical Fertilizer	42	28	29	33
2. Improved Seeds	26	18	26	22
3. Irrigation	20	15	27	17
4. Plant Protection Services	5	22	13	14
5. Additional cutlivated land	7	17	5	14
Total	100	100	100	100

The programme for the supply of these inputs will be as follows:

a. Improved Seeds:

Since improved seeds play an important role increasing agricultural production, it is estimated that their use will contribute to 22 per cent of the increase in total production. It is estimated that in the last year of the Plan 25,020 metric tons of improved seeds will be provided for 472,000 hectares of land. A breakdown of this programme is given in Table 23.

TABLE 23

USE OF IMPROVED SEEDS

Area in '000 Hectare
Seed in '000 M. T.

Crops	1970-71		1971-72		1972-73		1973-74		1974-75	
	Area	Seed	Area	Seed	Area	Seed	Area	Seed	Area	Seed
Paddy										
Intensive Districts	88	4.4	98	4.9	118	5.9	139	7.0	147	7.4
Other Districts.	17	0.7	22	1.1	32	1.6	41	2.0	50	2.5
Total	105	5.1	120	6.0	150	7.5	180	9.0	197	9.9

Wheat										
Intensive Districts.	86.4	6.0	102.3	7.2	121.9	8.5	145.6	10.2	170.0	11.9
Other Districts.	9.7	0.7	13.2	0.9	17.6	1.2	23.4	1.6	30.0	2.1
Total	96.1	6.7	115.5	8.1	139.5	9.7	169.0	11.8	200.0	14.0
Maize										
Intensive Districts.	13.0	0.19	21.0	0.32	32.0	0.48	46.0	0.69	56.0	0.84
Other Districts.	2.0	0.03	4.0	0.06	8.0	0.12	14.0	0.21	19.0	0.28
Total	15.0	0.22	25.0	0.38	40.0	0.60	60.0	0.90	75.0	1.12

The necessary arrangements for increasing the supply of improved seeds should be made from the beginning of the Fourth Plan period. The major responsibility for this will lie with the Agriculture Education and Research Department, the Agri-Extension Department, and the Agriculture Supply Corporation. Foundation seeds which are discovered to be suitable for food grain production from research work undertaken by the agriculture stations of the Agriculture Education and Research Department and located in different parts of the country will be multiplied at government farms and made available to registered seed growers. The seed growers will grow the improved seeds under the direction and technical assistance of the Agriculture Education and Research Department. The Agriculture Supply Corporation will purchase and sell these certified seeds inside the country and import the necessary amount of seeds to meet the requirements fixed under the agriculture extension programme.

Only a portion of the total amount of improved seeds required to meet the target will be supplied by the Agriculture Supply Corporation. A major portion of the required improved seeds is expected to be provided by the farmers themselves. To accomplish this, it is necessary to make the agriculture extension programme more effective. The quantity of seeds to be supplied by the Agriculture Supply Corporation is given in Table No 24.

TABLE 24

QUANTITY OF SEEDS TO BE SUPPLIED BY AGRICULTURE SUPPLY CORPORATION

(In Metric Tons)

Crops	1970-71	1971-72	1972-73	1973-74	1974-75
Paddy	400	600	800	1,100	1,400
Wheat	546	780	1,092	1,326	1,510
Maize	136	204	306	408	510

b. Chemical Fertilizer:

More than 33 per cent of increased production during the Fourth Plan period is expected to be achieved by the use of chemical fertilizer. Accordingly, 25,000 Mt. of chemical nutrient fertilizer will be used for different crops in the last year of the Plan period. Those areas where irrigation is available and where improved seeds are being used will be given top priority for use of fertilizer. Moreover, information about the use of the new types of chemical fertilizer will be provided to the farmers by the Depar-

tment of Agricultural Extension. According to this programme, it is proposed that the Agriculture Supply Corporation will import all the required chemical fertilizer and distribute it to the farmers through its agencies. The annual quantities of chemical fertilizer used for different crops during the Plan period are given in the following table:

TABLE 25

QUANTITY OF CHEMICAL FERTILIZER TO BE USED

(In Metric Tons)

Crops	1970-71	1971-72	1972-73	1973-74	1974-75
Paddy					
Intensive Districts.	3,892	5,989	7,531	9,258	11,365
Other Districts.	57	104	166	239	317
Total	3,949	6,093	7,697	9,497	11,682
Wheat					
Intensive Districts.	3,982	4,692	5,562	6,634	7,728
Other Districts.	420	536	684	880	1,091
Total	4,402	5,228	6,246	7,514	8,819
Maize					
Intensive Districts.	832	1,395	2,294	3,309	4,507
Other Districts.	397	500	628	782	950
Total	1,229	1,895	2,922	4,091	5,457

c. Irrigation:

In accordance with the target of food grain production in the Fourth Plan, it is estimated that additional 246,000 hectares of land will require irrigation facilities.

It will contribute more than 17 per cent to the increased production. During the Plan period 183,632 hectares of cultivated land will be irrigated by major, tube-well, and minor irrigation projects. Details about the various irrigation projects included in the Fourth Plan are given under the chapter on the Irrigation Programme.

d. Plant Protection Services:

Approximately 16 per cent of total annual agricultural production is estimated to be destroyed by diseases, insects and pests. It is thus evident that if the plant protection programme is implemented more effectively, agricultural production can be easily raised. But so far, it has been possible to provide the necessary facilities to limited areas only because of a lack of the necessary technicians and materials. Such services are expected to contribute about 14 per cent to increased production in the Fourth Plan period. Necessary arrangements will be made to extend plant protec-

tion services. This programme will include the training of farmers regarding plant protection, the distribution of necessary materials including polythene bags and pesticides at low prices, and the provision of emergency plant protection services. Since it is not possible to supply pesticides solely through the government, the private sector will also be encouraged in this field and will be provided with the necessary technical and other assistance. It is estimated that plant protection materials worth 5.4 million rupees will be used during the Fourth Plan period. Out of this, materials worth 3.9 million rupees will be supplied by the Agriculture Supply Corporation.

e. Agricultural Tools and Implements:

Due attention has been given to the use of improved agricultural tools and implements under the agriculture development programme of the Fourth Plan. The major portion of the demand for such materials is expected to be supplied by the existing Agriculture Tools and Implements Factory at Birgunj.The main responsibility for the distribution of tools and implements will be upon the Agriculture Supply Corporation. The Corporation will sell agriculture tools and implements worth Rs. 7.3 million during the Plan period.

f. Reclamation of additional cultivable land:

To achieve the agricultural production target of the Fourth Plan, 25,000 hectares of additional land will be reclaimed, out of which 21,000 hectares will be brought under cultivation. This will contribute approximately 14 per cent to additional production. Reclamation works in these 25,000 hectares of new land will be undertaken by the Department of Resettlement and Resettlement Company.

g. Cereal Crop Research:

Adaptive research on the use of different inputs (i.e. improved seeds, fertilizers, tools and implements and irrigation etc.) plays an important role in achieving the targeted increase in the production of cereal crops. Research work is also essential to sustain the increase in production by solving any problem arising from the use of improved methods and inputs. In view of this, details about research on cereal crops to be undertaken during the Plan period are included in the Chapter on Agriculture Education and Research Programme.

h. Cash Crop:

In view of the requirements of the existing agro-industries (viz. sugar, cigarettes and jute) and the level of exports during the Third Plan, it is expected that the production of cash crops will increase by 40.3 per cent during the Fourth Plan. Accordingly, the production targets of sugarcane, jute, tobacco and oilseeds have given in the following Table. Surveys of areas suitable for the cultivation of cotton will be completed, along with the experimental research work to be undertaken in the Government Agriculture Stations.

TABLE 26

PRODUCTION TARGET OF CASH CROPS

(In Thousand Metric Tons)

Crops	Est. Production (1969-70)	Target (1974-75)	Additional increase	Increase in percentage
1. Sugarcane	200.0	300.0	100.0	50.0
2. Jute	48.0	65.0	17.0	35.4
3. Tobacco	7.5	10.0	2.5	33.3
4. Oilseeds	58.0	64.8	6.8	11.7
Total	313.5	439.8	126.3	40.3

The quantity of necessary inputs to fulfil the target in respect of the cash crops is estimated as follows:

TABLE 27

QUANTITY OF NECESSARY INPUTS FOR CASH CROPS 1974-75

Inputs	Unit	Sugarcane	Jute	Tobacco	Oilseeds	Total
1. Additional land to be cultivated	Hec	2,520	2,994	2,000	3,000	10,514
2. Land to be irrigated	"	1,400	5,274	1,450	13,000	21,124
3. Improved seeds	M.T.	11,900	72	120	160	12,252
4. Fertilizer	"	212	660	35	888	1,795

The quantity of seeds and chemical fertilizers required for this programme will be made available through the Agriculture Supply Corporation. As in the case of the food grain programme, arrangements for the provision of loans for the cash crop development programme will be taken care of by the concerned organization. It will be difficult to enlist the interest and cooperation of the farmers in this programme because of its newness. The targets, therefore, have been made more practical. The details of the cash crop programme are given in the following Table:

TABLE 28

CASH CROPS PROGRAMME

Crops	1970-71	1971-72	1972-73	1973-74	1974-75
A) AREA TO BE COVERED BY IMPROVED SEEDS (In Hectare)					
Sugarcane	119	555	1020	1680	2500
Jute	500	1500	4000	6500	8000
Oilseeds	650	3200	6400	10900	16000
Tobacco	35	100	200	330	500

B) REQUIREMENTS OF SEEDS (In M.T.)

Sugarcane	566.37	2165.86	4857.14	8000.16	11900.94
Jute	4.50	13.50	36.00	58.50	72.00
Oilseeds	6.50	32.00	64.00	109.00	160.00
Tobacco (Kg.)	8.40	24.00	48.00	79.20	120.00

C.) REQUIREMENTS OF CHEMICAL FERTILIZERS (In M.T.)

Sugarcane	10.0	39.0	87.0	143.0	212.0
Jute	40.0	120.0	320.0	530.0	660.0
Oilseeds	36.0	178.0	361.0	605.0	888.0
Tobacco	2.0	7.0	14.0	23.0	35.0
Total	88.0	344.0	782.0	1301.0	1795.0

The following districts have been selected on the basis of their potentiality for development and their contiguity to the existing factories:

Crops	Districts
1. Sugarcane	Bara, Parsa, Rupandehi, Kapilvastu, Morang, Chitwan, Kailali
2. Jute	Morang, Sunsari, Jhapa, Saptari
3. Tobacco	Dhanusha, Siraha, Mahottari, Sarlahi, Chitwan, Kailali, Bardia, Banke, Dang
4. Oilseeds	Saptari, Sarlahi, Dhanusha, Makwanpur, Rautahat, Nawal-parasi.

Research on Cash Crops

Practical research work on cash crops is in the preliminary stage. It has, therefore, become necessary to pay greater attention to it. In the Fourth Plan period, practical research work will be undertaken at the Agriculture Stations of Parwanipur, Tarhara, Bhairahwa, Janakpur and Rapti in order to introduce improved seeds and to identify improved methods of production. Under this programme, it is also proposed to produce those improved seeds which have been found suitable by research work and to distribute them to the farmers. The details of this are included in the programmes of Agriculture Education and Research.

Livestock Development

There is ample scope for livestock development in a mountainous country like Nepal. In addition, livestock products like meat, eggs and milk are considered to be important for nutritive diets. So far, the per capita consumption of these commodities is very low. We also must import these items. So it is, therefore, essential to pay attention to the development of livestock. In the Fourth Plan, emphasis is given to the implementation of livestock development programme in those districts where livestock farms and other services are available. It is envisaged in the Plan to increase the production of meat, milk and eggs by 16 per cent, 23 per cent and 26 per cent respectively. The following Table shows the production targets:

TABLE 29

PRODUCTION TARGET OF LIVESTOCK PRODUCTS

Items	Unit	Est. Production of 1969-70	Target of 1974-75	Increase	Increase in Percentage
Meat	M.T.	46,100	53,475	7,375	16
a. Buffaloes	M.T.	19,000	23,000	4,200	22.1
b. Pigs	M.T.	4,200	5,600	1,400	33.3
c. Sheep	M.T.	2,700	3,100	400	14.8
d. Goats	M.T.	2,900	3,100	200	6.9
e. Fowls	M.T.	7,300	8,475	1,175	16.0
f. Others	M.T.	10,000	10,000	—	—
Milk	'000 litres	5,82,600	7,17,000	1,34,400	23
a. Buffaloes	'000 litres	4,00,000	5,00,000	1,00,000	25
b. Cows	'000 litres	1,78,000	2,12,000	34,000	19
c. Others	'000 litres	4,600	5,000	400	9
Milk Products					
a. Ghee & Butter	M.T.	9,000	12,000	3,000	33
b. Cheese	M.T.	37	75	38	100
Eggs	'000 Nos.	1,80,000	2,27,000	47,000	26

In order to fulfil the targeted production of meat, the number of animals required at the end of the Plan period are shown in the following table:

TABLE 30

NUMBER OF ANIMALS REQUIRED FOR MEAT

(In Thousands)

Livestock	Unit	Plan target	Available within the country	To be imported
Buffaloes	No.	232	197	35
Pigs	No.	140	130	10
Sheep	No.	258	228	30
Goats	No.	344	284	60
Fowls	No.	6,780	6,780	—

Since all the slaughter animals required to fulfil the target will not be available internally from the natural increase in the country-animal stock (even including the increase due to the livestock development and improved cattle breeding programme) the shortage will be met by imports.

Pasture Development Programme

No programme for the supply of balanced feed and the arrangement of pasture for livestock have yet been implemented in Nepal. For the expansion of improved animal husbandry, it is necessary to make additional arrangements for pastures. In the northern region of the country, traditional animal husbandry is deteriorating because of the lack of pastures. It has, therefore, become necessary to develop pastures in this region.

In view of these factors, pasture development centres will be established in Lalitpur, Rasuwa, Ramechhap, Rapti, Sunsari and Jumla in order to underake research and experimentation with improved grasses and to produce and distribute the seeds. The seeds of improved grasses will be imported and experimented at these centres. The seeds found to be suitable will be produced and made available to the farmers.

Balanced Feed

A programme for making available qualitatively improved and balanced feed is also included in the Fourth Plan. At present the only food producing centre is in Hetauda. It is envisaged in the Fourth Plan to establish four additional centres in the private sector. Production of each of these centres is projected in the following Table:

TABLE 31

PRODUCTION TARGET OF ANIMAL FEED
(In Metric Tons)

Producing Centres	1970-71	1971-72	1972-73	1973-74	1974-75
Pnblic Sector					
Hetauda	2,500	2,500	2,500	2,500	2,500
Private Sector					
Biratanagar	—	2,500	2,500	2,500	2,500
Nepalgunj	—	—	2,500	2,500	2,500
Bhairahawa	—	—	—	2,500	2,500
Dhangadi	—	—	—	2,500	2,500
Total	2,500	5,000	7,500	12,500	12,500

Artificial Insemination

In the field of livestock development, it has been difficult to make available improved bullocks and buffaloes in adequate numbers for the purpose of breeding. It has become necessary, therefore, to implement an artificial insemination programme. This programme will help to increase the production of milk and other livestock products from the local breed.

At present, facilities for artificial insemination have been made available at the existing seven centres and four sub-centres located in different parts of the country. In order to achieve the livestock development target of the Fourth Plan, these facilities will be provided in an extensive way. Under this programme, provision is made for the recruitment of the necessary technicians who will be posted in the existing thirty-four veterinary hospitals and seven new hospitals to be opened during the Plan period. It is expected that 198,000 cows and buffaloes will be artificially inseminated.

Veterinary Services

The availability of veterinary services is essential for the protection of livestock. At present, there are 34 veterinary hospitals in the country. Seven new hospitals will be established in the northern hilly region during the Plan period. These new hospitals will be established specially in those districts where the livestock development programme is to be implemented. Existing Veterinary Hospitals are at present located in the following places:

Kathmandu	Birgunj	Ilam	Pokhara
Lalitpur	Kalaiya	Bhadrapur	Bandipur
Bhaktapur	Bharatpur	Bhairawa	Baglung
Trisuli	Okhaldhunga	Palpa	Mustang
Dhulikhel	Bhojpur	Nepalgung	Jumla
Janakpur	Rajbiraj	Surkhet	Humla
Sindhuligadi	Dhankuta	Pyuthan	Doti
Jiri	Biratnagar	Dang	Baitadi
		Kailali	Kanchanpur

During the Plan period, Veterinary Hospitals will be set up in the following places:

Taplejung	Ramechhap
Rasuwa	Bajura
Rukum	Darchula
Sankhuwashabha	

Surveys of animal diseases will also be conducted. The production of vaccines in the laboratory at Kathmandu will be expanded in hopes of gaining control of different types of diseases.

Research and Training on Livestock Development

Four multipurpose livestock development farms have been set up at Lalitpur, Chitwan, Sunsari and Kaski districts in order to conduct adaptive research on livestock farming to make available to the farmers those improved animal breeds found suitable after research, and to provide practical training on animal husbandry. In addition, sheep breeding farms have been established at Chitlang, Panchsaya khola and Jumla. The goal of improving local breeds has been partially met by the improved livestock pro-

duced on these farms. In order to implement this programme more extensively, livestock development farms will be established at Nepalgunj and Taplejung during the Plan period. In addition, arrangement will be made on the Farms to provide practical training to the farmers regarding livestock development. The projected production of livestock on these Government farms during the Plan period is shown in the following Table.

TABLE 32

PRODUCTION OF LIVESTOCK IN THE GOVERNMENT FARMS

Livestock	Unit	1970-71	1971-72	1972-73	1973-74	1974-75	Total
Cow-calves	No.	75	90	97	113	152	527
Baffalo-calves	No.	104	119	128	159	202	712
Lambs	No.	616	746	1,034	1,139	1,379	5,094
Pigs	No.	950	1,210	1,460	1,820	2,310	7,750

Poultry Farming

Keeping in view the important role of poultry farming in the field of livestock development, a programme for the production and sale of improved breeds of chicken has been implemented. In the last few years, encouraging progress has been made by the private sector in poultry farming especially in Kathmandu. At present, 100,000 chickens of the new improved breed are produced every year in the three existing hatcheries located at Parwanipur, Jawalakhel and Biratnagar. It is estimated that the two privately owned hatcheries produce 100,000 chickens annually.

In order to fulfil the targets for poultry meat and eggs, three brooder units will be established at Pokhara, Nepalgunj and Bhairahwa during the Plan period. As the target can not be fulfilled by the Government sector alone, further contributions in this field are needed from the private sector. Hence, five hatcheries, each with an annual production capacity of 100,000 chickens should be established in the private sector. The number of chickens to be produced and distributed from both the government and private hatcheries during the Plan period is shown in the following Table:

TABLE 33

PRODUCTION AND SALES OF CHICKENS (In Thousand)

Hatchery	1970-71	1971-72	1972-73	1973-74	1974-75
Government	100	100	100	100	100
Private	100	200	300	400	600

Diary Industry:

It is evident that programmes such as artificial insemination, pasture development and production of improved food, as mentioned above, will help to fulfil the Fourth Plan's target of milk production. Moreover, it is expected that milk production will increase as a result of the assured market provided by the Dairy Development Corporation which was established to produce commercially pasteurized milk and milk-products. The production targets of processed milk, butter, cheese and other milk products will be fulfilled mainly from this Corporation and its centres that will be established during the Plan period. The programme of the Dairy Development Corporation are as follows:

(i) Urban Milk Supply Project

At present, a central dairy with a capacity of 1.2 million litres has been established in Kathmandu. It collects, processes, preserves and distributes milk and milk-products in a modern way. Keeping in view the increasing demand for milk, the capacity of this dairy will be increased to 3 million litres during the Plan period. In addition, since it has become necessary to provide pasteurized milk in other urban areas of the country, a programme for establishing dairies at Biratnagar, Nepalgunj and Birgunj is also included in the Fourth Plan. The projected annual production of pasteurized milk during the Plan period is shown in the following Table:

TABLE 34

PRODUCTION TARGET OF PASTEURIZED MILK

(In Thousand Litres)

Projects	1970-71	1971-72	1972-73	1973-74	1974-75
1. Central Dairy Kathmandu	1,200	1,500	1,500	3,000	3,000
2. Urban Milk Supply Project:					
a. Biratnagar	Construction	Construction	Construction	1,500	1,500
b. Nepalgunj	—	Construction	Construction	Construction	1,000
c. Birgunj	—	—	Construction	Construction	Construction

(ii) Production and Sale of Cheese

There is ample scope for producing milk-products in the northern region of Nepal where animal husbandry is the main occupation of the people. So far, cheese factories have been established at Lamtang, Thodung and Pike. It is estimated that the production of cheese from these factories was approximately 20 metric tons in 1969/70. During the Fourth Plan period, five new factories will be established in different parts of the country. It is estimated that 50 metric tons of cheese will be produced from these factories by the end of the Plan period.

(iii) Butter producing Centre

It is estimated that 19 metric tons of butter were produced in 1969/70 by the Dairy Development Corporation. During the Plan period, two butter producing centres will be established in the area of greatest potentiality in the country.

Carcass Utilization Project

According to the agreement between His Majesty's Government and the United Nations, this project is being implemented at Hetauda. This project will be helpful in the utilization of carcasses which would otherwise have been wasted. It will also include training in order to improve the quality of raw materials needed for the leather industry. Raw materials needed for such industries will be flayed and cured, thereby helping to increase the income of people involved in this kind of work. When exported to foreign countries, leather processed in a scientfic way will fetch maximum prices. Products to be made available from this project will include some nutritious materials necessary for animal feed (like meat-cum-bone meal, meat-meal, bone-meal, technical fat) and horn and hoof meal fertilizer, bone-meal fertilizer, compost manure, hoof needle oil, leather etc. Since the dead bodies will be collected as soon as possible the possibilities of spreading diseases to men and livestock will be reduced.

Fisheries Development

Since there is a suitable climate and an adequate quantity of water in the different lakes and rivers of Nepal, it has become essential to pay attention to the development of fisheries in hopes of making available an essential nutritive diet for the increasing population. At present, no estimate of total fish production of the country is available. It is, however, estimated that additional fish production was approximately 560 metric tons in the fiscal year 1969/70. On the basis of this estimate and considering the possible programmes which can be implemented during the Fourth Plan, it is envisaged to increase additional fish production from 560 metric tons to 2000 metric tons by 1974—75. According to this estimate, the quantity of fish to be available from different sources is shown in the following Table:

TABLE 35

FISH PRODUCTION TARGET
(In Metric Tons)

Sources	Est. increase in 1969-70	Additional increase in 1974-75	Total Increase
Lakes	10	15	25
Rivers	—	250	250
Ponds	400	800	1,200
Commercial Farms	150	375	525
Total	560	1,440	2,000

About one million fingerlings were sold in the year 1969/70. In order to fulfil the estimated target of fish production, 4 million fingerlings will have to be sold in the year 1974/75. Since it is not possible to produce the fingerlings from the Government Fishery Centres and Fish-farms alone, the private sector will be encouraged to produce more and will be provided with technical and other assistance. It is estimated that while carrying the fingerlings from the government Fish Centres to the farmers' ponds, the rate of mortality is about 25 per cent. To compensate for this, about one million fingerlings should be produced in the private sector. The number of fingerlings to be sold and distributed each year during the Plan period by the government farms and the private sector are given in the following Table:

TABLE 36

SALE AND DISTRIBUTION OF FINGERLINGS

(No. in Thousand)

Source	1970-71	1971-72	1972-73	1973-74	1974-75
Goverment Sector	100	1,450	1,850	2,500	3,000
Private Sector	—	50	150	500	1,000
Total	100	1,500	2,000	3,000	4,000

During the Plan period, the annual projected production of fingerlings from all the fishery development projects operated by the government sector is given in the following Table:

TABLE 37

PRODUCTION OF FINGERLINGS IN THE GOVERNMENT SECTOR

(No. In Thousand)

Fish Centres Farms.	1970-71	1971-72	1972-73	1973-74	1974-75
Godavari	250	110	80	100	100
Janakpur	150	175	210	240	275
Pokhara	30	50	80	100	120
Tarahara	125	170	200	210	230
Parwanipur	150	200	220	240	270
Bhairahwa	80	100	125	160	200
Hetauda	300	420	525	600	600
Rapti	100	400	460	550	650
Kathmandu	70	350	500	600	750
Trout Hatchery	—	—	50	75	100
Nepalgunj	—	10	20	40	75
Rajbiraj	—	10	20	40	75
Eastern Terai	—	—	75	300	400
Western Terai	—	—	—	100	300
Total	1,255	1,995	2,565	3,355	4,145

Accordingly, it has been estimated that more than 1,500 metric tons of fish will be produced by the end of the Plan due to the distribution of the fingerlings. This still leaves about 500 metric tons to fulfil the plan target. This shortage will be met by the production of the Government Fish Centres and Farms and the fisheries contract on different rivers. The annual projected production of the Government Fish Centres and Farms during the Plan period is given in the following Table.

TABLE 38

PRODUCTION OF FISH FROM THE GOVERNMENT FISH CENTRES

(In hundred kilograms)

Fish Centres & Farms	1970-71	1971-72	1972-73	1973-74	1974-75
Godavari	2.5	4.0	6.2	7.0	8.0
Janakpur	4.0	6.0	8.0	9.0	10.0
Pokhara	65.0	60.0	55.0	50.0	50.0
Tarahara	4.0	5.0	5.5	6.0	7.5
Parwanipur	4.0	5.0	6.0	7.5	8.5
Bhairahawa	3.0	4.0	5.0	7.0	9.0
Hetauda	150.0	300.0	400.0	400.0	450.0
Rapti	—	200.0	300.0	400.0	550.0
Nepalgunj	—	—	2.0	3.0	4.0
Eastern Terai	—	—	—	300 0	300.0
Rajbiraj	—	—	2.0	3.0	4.0
Western Terai	—	—	—	—	150.0
Total	232.5	584.0	789.7	1,192.5	1,551.0

Fish Breeding and Research

Fish breeding centres and commercial farms have been established in different parts of the country in order to breed native and foreign fishes (like carps, trouts, asala and mahasher) after the necessary survey and research is done in accordance with the climatic and geographic conditions of the country. During the Fourth Plan period, two new breeding centres and two large fish development centres will be established.

Horticulture Development

It is essential to increase the production of fruits and vegetables in order to meet the growing internal demand for nutritious food and to possibly increase the volume of exports. Since diverse climatic condition are present in the country, there is ample opportunity to produce different kinds of fruit. With due consideration to the progress made so far and the potential for development in this field, the targets for the production of fruits, vegetables and potatoes during the Fourth Plan period have been fixed and are given in the following Table:

TABLE 39

TARGET OF HORTICULTURAL PRODUCTIONS

Crop	Unit	Situation in 1969-70	Target of 1974-75	Net Increment	Increase in Percentage
Fruits:					
Area	Hectare	21,000	30,000	9,000	48.14
Production	M.T.	2,66,000	2,76,000	10,000	3.75
Potato:					
Area	Hectare	43,875	55,000	11,125	25.35
Production	M.T.	3,35,000	4,35,000	1,00,000	29.85
Vegetable seeds:					
Production	M.T.	20	40	20	100.00

The requirements for those seed and plant inputs necessary to fulfil the Plan's production target for each crop have been estimated, and the programme for making such inputs available has been determined as follows:

Fruits

In order to fulfil the target of the Plan, 2.25 million plants will be required for an additional 9,000 hectares or 250 plants per hectare. However, about 33 per cent of the plants will be lost during planting, so an additional 75 million plants will be required, thus making the total number of plants required to be 3 million. This requirement will be met by production of the horticulture centres located in different parts of the country and also by the provision of incentives and encouragement to the private sector. The shortage will be met by imports.

The annual programme making these plants available is shown in the following Table:

TABLE 40

PLANTS TO BE AVAILABLE IN THE FOURTH PLAN PERIOD

Year	Number of Plants required	Production in Horticultural Centres	Production in the Private Sector	Plants to be Inported
1970-71	5,00,000	1,50,000	—	3,50,000
1971-72	5,50,000	2,00,000	—	3,50,000
1972-73	6,00,000	2,50,000	50,000	3,00,000
1973-74	6,50,000	3,50,000	1,00,000	2,00,000
1974-75	7,00,000	4,50,000	2,00,000	50,000
Total	30,00,000	14,00,000	3,50,000	12,50,000

Potatoes

It is estimated that it will be necessary to cultivate potatoes on an additional 11,125 hectares of land in order to increase the production of potatoes by 100,000 metric tons by the end of the Plan period. This will require 12,500 metric tons of potato seeds, including 1 M.T. per hectare for the 11,125 hectares and a provision for potential loss. The Nucleus Seed Production Programme will be implemented to meet this requirement. Under this programme, registered growers will produce improved potato seeds under the technical guidance of the Horticulture Department. Foundation seeds will be produced and made available from the Potato Development Centres under the Horticulture Department. Fertilizers and other inputs required for this programme will be made available from the Agricultural Supply Corporation. It is expected that 12,500 metric tons of potato seeds will be produced by the third year of the Plan period.

Vegetable Seeds

In order to produce the additional 20 metric tons of vegetable seeds envisaged in the Plan, it will be necessary to cultivate vegetables on 40 hectares of land, assuming that 500 Kg. will be produced per hectare. A Nucleus Seed Production Programme will be implemented for this purpose as in the case of potato seeds production, and necessary technical and other assistance will be provided to the private sector. Accordingly, the annual programme for cultivating vegetables both in the Hilly and the Terai Regions is given in the following Table:

TABLE 41

PROGRAMME FOR THE PRODUCTION AND CULTIVATION OF VEGETABLE SEEDS

Region	Unit	1970-71	1971-72	1972-73	1973-74	1974-75
Hills						
Area	Hectare	4	8	14	20	20
Vegetable Seeds	M.T.	2	4	7	10	10
Terai						
Area	Hectare	4	8	14	20	20
Vegetable Seeds	M.T.	2	4	7	10	10

Large Scale Horticulture Development

In order to augment horticulture production effectively and to develop it commercially a large scale horticulture development programme will be implemented in those places where transportation facilities are available. Accordingly, two 40 hectare horticultural farms will be established along Prithivi Highway and Arniko Highway. Similarly, another horticulture farm covering an area of 120 hectares will be established along the Simra-Janakpur sector of Mahendra Highway.

Horticulture Research

At present, experimental research work aimed at increasing the production of fruits, potatoes and vegetables is being undertaken at horticultural stations located in different parts of the country. Before the Third Plan, there were 16 such stations, including nurseries under the Department of Horticulture. Seven additional stations were established during the Third Plan period. New stations will be established at Humla and Mustang during the Fourth Plan period. Emphasis in this research programme will be given to the fulfilment of the production targets of the Fourth Plan. Since no programme has yet been implemented in the field of horticulture, research work will also be encouraged in this field at the existing stations.

Agricultural Education and Research

In order to ascertain the effects of the combined or individual use of various inputs (like improved seeds, fertilizers, implements, pesticides and irrigation) in increasing the output of important cereal and cash crops and also to determine their practical utility, research work has already been started in the agricultural stations and farms of the Department of Agricultural Education and Research located in different parts of the country. The training programme for technicians required in the agricultural sector is also continuing. During the Fourth Plan period, all research activities undertaken by the Agricultural Education and Research Department will be made more effective, emphasizing those aspects of research which directly help to increase productivity. Because of the great climatic differences in the country, it is not possible to apply the results of research and experiments from one area to another. Therefore, all research activities in all stations and farms will be carried out in an integrated way. The programmes to be implemented by various sections are as follows:

(a) Agricultural Botany

In hopes of improving cereal crops such as paddy, wheat, corn, millet as well as other crops such as oil-seeds and pulses, the collection of improved seeds from both internal and external sources and the multiplication of those seeds found suitable after analysis and varietal tests will be expanded. At present, sample-analysis of seeds as required by the Agriculture supply corporation and the district agricultural development programme are being undertaken at a *Seed Testing Laboratory in Kathmandu*. Since the Centre is unable to provide the required facilities for testing seeds, additional laboratories will be established in the agricultural stations located at Parwanipur, Janakpur and Bhairahwa during the Plan period. In addition, a seed multiplication and development project will be implemented with the joint collaboration of His Majesty's Government, Nepal and the United Nations Special Fund. Under this programme, a seed-processing centre will be established at Hetauda and necessary technical services for the production of certified seeds will be provided to the farmers.

(b) Agronomy

In accordance with the Plan target, foundation seeds (including the

imported varieties that are found suitable after botanical research and analysis) will be produced at various agricultural farms in the country. In addition, experimental research work on the use of the new variety seeds, fertilizers, water and other inputs will be continued as in the past. These foundation-seeds will be produced at the agricultural farms at Khumaltar, Doti, Nepalgunj and Janakpur and the agricultural stations at Rampur, Parwanipur, Tarahara and Bhairahwa. The projected production for each year of the Plan period is as given below in the Table. In order to develop improved seeds suitable for the hilly regions, two agronomy farms, one in the eastern hills and the other in the western hills, will be established during the Plan period:

TABLE 42

PROJECTED PRODUCTION OF DIFFERENT AGRICULTURAL PRODUCTS DURING THE PLAN PERIOD (In Metric Tons)

Crop	1970-71	1971-72	1972-73	1973-74	1974-75	Total
Paddy	108	130	149	171	192	750
Wheat	39	45	51	56	61	252
Sugarcane	200	237	262	299	335	1333
Tobacco	0.04	0.05	0.06	0.07	0.08	0.30
Oil-seeds	2.10	2.70	3.20	3.90	4.50	16.40
Jute	0.30	0.40	0.50	0.60	0.70	2.50

(c) Agricultural Engineering

The design and estimation of agricultural construction projects and research on improved agricultural tools and machines, including experimental works regarding irrigation channels, tubewells, drainage and water utilization, will be continued as in the past. The necessary technical services will also be made available to the farmers.

(d) Entomology

The research programme in the field of entomology includes an extensive survey of insects and parasites, a collection and study of their life cycles, character and nature, the influence of weather, and the use of various pesticides and chemical control measures. On the basis of results obtained from research work, crop-protection measures will be made more effective. Necessary technical help will be provided for this programme. Crop protection units will be established at Rampur, Nepalgunj, Rajbiraj, Bhairahwa and Dahngarhi during he Plan period. Specific research will be carried on regarding those insects which appear to be important from an industrial point of view: bees, silk-worms, etc.. In addition, legal measures will be taken, and plant quarantine units will be established in order to check the entry of new pests and other disease-transmitting insects and to prevent the spread of pests within the country, thereby making the farmers more enthusiastic and responsive towards crop protection measures. Plant

Quarantine Check-Posts will be established at Tribhuwan Airport, Birgunj, Nepalgunj, Jogbani and Bhairahwa during the Plan period.

(e) **Plant Pathology**

In order to control plant diseases and to safeguard production, plant pathological research will be conducted on both local and improved varieties of paddy, corn, wheat, citrus fruits, vegtables, potatoes, oranges, sugarcane, jute and tobacco. Research, experimentation, and demonstration of the simple, economic, and effective measures to control plant diseases will be undertaken. For this purpose, there is at present a laboratory at Khumaltar, and plant protection units have also been set-up at Ilam, Biratnagar, Parwanipur, Janakpur and Pokhara. New units will be established in Bheri, Rapti and Dhaulagiri Zones during the Plan period. Because this programme is also related to entomology, both will be jointly implemented by all the plant protection units.

(f) **Soil Science**

In order to ascertain the production potential of the soil, the initial necessary steps are the survey, analysis and classification of the different types of soil found in the country. The necessary work in this field has already started. A central laboratory has been established for the analysis of various types of soil and their properties. In the Plan period a soil survey of 3.427 million hectares, of land and a analysis of 40,000 samples of soil will be conducted. Experimentation on the productivity differences of major crops like jute, maize and paddy, as a result of the application of different organic and chemical fertilizers with various types of soil and climatic conditions, will be conducted at different Agricultural Stations and Farms. Also, HMG in a joint effort with the UN Special Fund will conduct research on fertilizer and soil productivity changes in central part of the country. The first phase of this joint effort will consist of experiments on different crpos and fertilizer use according to soil conditions, demonstrations of results in the farmers' fields, and the establishment of a soil testing laboratory at Parwanipur. In the second phase of the programme, two pilot projects will be scientifically implemented. Studies will also be undertaken regarding soil physics, soil microbiology, and soil conservation.

(g) **Agricultural Stations**

The different research projects outlined above have been implemented at the agricultural stations located at Bhairahwa, Rampur, Parawanipur and Tarahara. The necessary administrative arrangements will be made at the begining of the Plan period to ensure better coordination between the differnt programmes. The work to be done by the respective sections has already been outlined above.

(h) **Agricultural College**

In order to fulfil the requirements for medium and other lower level technicians, an agricultural school was established in 1956. An Agricultural College was established in 1968, with the objective of domestically providing the training facilities for higher level technicians. By the end of 1970,

it is projected that 225 persons will be trained up to I.Sc. level, 25 persons upto B.Sc. level, 700 persons up to JTA level, 340 J.T. As will be upgraded, and field training will be provided to 500 persons.

Agriculture Extension

The Agriculture Extension Programme has been used as an important means of providing technical assistance and necessary knowledge to the farmers so that they could adopt improved modern agricultural techniques such as the applicable findings of different agricultural research activities. The Extension Programme also involves the actual demonstration of results, farmers' training programmes, and competitions. Under this programme, District Agricultural Development Offices manned with Agricultural Graduates have already been established in 43 districts, and in each of another 22 districts, there are two to four medium level Agricultural technicians. At present, under the Agricultural Extension Department, there are 43 District Agricultural Development Officers, 90 J.T. and 700 J.T. As.

So far, Agricultural Extension has been primarily limited to food crops. It has, however, become necessary to pay attention to horticulture, fishery and livestock development projects in order to fulfil the Plan targets in these sectors. To implement the Agricultural Extension Programme effectively during the Plan period, specialists in cereals, cash crops, livestock, and horticulture, will be made available to the District Agriculture Development Offices according to their agricultural development programmes. Moreover, the number of village-level extension workers will be increased. Technical assistance will be provided to them from the nearest Agriculture Centres and Agriculture Farms. According to this policy, the District Agriculture Development Offices in 28 selected districts will be further strengthened in order to implement the Intensive Agricultural Development Programme. In each of the above districts there will be a J.T.A. for every three Panchayats, and one J.T. for 9 J.T.As, and one Graduate level agricultural technician for each District Agriculture Development Office. In these 28 districts, each J.T.A. and J.T. will have the responsibility of conducting agricultural extension work in their respective Panchayats, the names of which will be specifically stated. If, after the requirments of the 28 districts are filled, there are any remaining J.T.As, J.T.s, and Agricultural Graduates, they will be posted in the other 37 districts where Agricultural Development Offices have been established, including those 22 districts where only J.T.s have been deputed. They will be distributed according to the Districts' agricultural development programme. Since there is no arrangement in the central office to investigate and idertify the problems and to evaluate the facts and figures of the reports received from the District Agriculture Development Offices, it is important to initiate this kind of work. The Agriculture Exenstion Programmes' training and demonstrations to be conducted during the Fourth Plan period are given in the following Table.

TABLE 43

AGRICULTURAL EXTENSION TRAINING AND DEMONSTRATION

	1970-71	1971-72	1972-73	1973-74	1974-75
	1	2	3	4	5
1. Method Demonstration	7,000	8,000	9,000	10,000	11,000
2. Result Demonstration	3,900	4,100	4,300	4,500	4,500
3. a. Leader farmers' training (No.)	2,000	4,000	4,500	5,000	6,000
b. Trained leader farmers (No.)	30,000	40,000	45,000	50,000	60,000
4. Number of seasonal trained J.T. As and J.Ts.	200	400	400	500	500
5. a. Number of Farmers' Day	25	27	30	32	35
b. Number of Farmers participating in the Farmers' Day	2,500	2,700	3,000	3,200	3,500
6. Agricultural fairs and exhibitions	15	20	25	30	35
7. a. Number of districts contesting in the "Grow More Crop competition"	28	30	35	35	40
b. Number of district competitions	84	90	105	105	120
c. National Competition	1	1	1	1	1
d. Estimated Number of Farmers participating in the competition	900	1,000	1,100	1,200	1,400
8. Rural Youth Programme					
a. Number of 4-H Clubs	204	385	431	601	771
b. Members of 4-H Club and members to be trained	3,060	5,775	6,465	9,015	11,565
9. Agriculture Information Programme					
a. Books, booklets, pamphlets, posters publication (in thousands)	1,400	1,550	1,800	2,625	3,150
b. Agricultural exhibition	4	6	6	8	10

1. Method-Demonstration

The objective of the method-demonstration is to improve agricultural production by assembling the farmers of the region as a group in a co-operative farmer's field in a panchayat. They will be given instruction by

the J.T.s. and J.T.As, who are working in the panchayats under the guidance of DADO's on the use of scientific methods in agriculure (such as plant protection measures, different chemicals and mechanical uses), the improved techniques of cultivation, the application of chemical fertilizers, green-manures, farm-yard manures and also the preparation and uses of compost manures. Instruction will be also given to the farmers regarding the methods of improved animal husbandry, poultry farming and fishing, the required balanced diet for them, and methods of protection against various diseases and other pests. Each J.T.A. living in a panchayat will carry out method-demonstrations; and in the 28 districts covered by the intensive agricultural development programme, at least one compulsory method-demonstration regarding paddy, wheat and maize crops, in each Panchayat, will be carried out every year. In other districts, the method-demonstration on fruits, vegetables, animal husbandry, and fishing will also be carried out, according to the climate of the district.

2. Result-Demonstration

To show and convince farmers directly about the importance and advantages of the findings of research and the improved methods of agriculure, result-demonstrations will be arranged. Since the farmers are not easily convinced of the value of new techniques used by others or heard about from others, they will be shown the effects of improved seeds, fertilizers, insecticides and pesticides on their own fields. This will prove to be very advantageous if adopted; therefore, great attention will be given to this faster and more effective programme. While carrying out the result-demonstrations, the farmers should be convinced that improved seeds will produce more than the local ones. For this purpose, the improved seed varieties are to be sown along with the local ones. Although there will be some farmers who are already convinced that increased production will result from the use of the improved varieties, it is necessary to show to them the quantitative differences by using a variety of (improved) seeds sown in different plots. The changes in output of a particular type of seed due to differences in fertilizer dosage and knowledge regarding the use of chemical fertilizers in the area should also be included in the result-demonstrations.

These type of demonstrations will be carried out particularly on paddy, maize, wheat and cash crops. For demonstrations, chemical fertilizers, pesticides and new variety seeds will be provided free of cost to the farmers.

J.T.A.s will perform in heir assigned areas: two to three result-demonstrations for paddy and wheat, three for maize in the hills, one each in the Terai, and two for cash crops.

3. Leader Farmer Training

J.T.As stationed in various villages are to teach new techniques and provide necessary knowledge to the farmers regarding the cultivation of better seeds, uses of fertilizers, pesticides, medicines, agricultural implements, and scientific methods for livestock rearing. They are also to select

progressive farmers and conduct a one to three day training course regarding paddy, wheat, maize, cash and other crops, Every J.T.A is to conduct, on an average, five such training courses each year. The necessary seeds, fertilizers, medicines, etc., will be provided free of charge to the J.T.As for these training programmes. The target of providing training to at least ten Leader Farmers has been set.

4. Seasonal In-Service Training

Provisions have been made to provide seasonal training to the J.T.As on such matters as new seeds, fertilizers, plant protection and other medicines recommended as useful by the research programme and also about new methods of horticulture, fishery and livestock rearing. Such a programme is not to be longer than five days and should be arranged in each of the zones by those related to or in the agricultural departments. Keeping in mind the limited time and means, it is not possible to conduct this type of training programme in all of the districts, so efforts will be made to train a most five J.Ts. and J.T.As from the intensive districts. The training programme will consist of two parts:

(a) Winter Season Training: The course will include audio-visual training and will cover all kinds of winter crops and fruits, taking place from Mid-September to Mid-November.

(b) Summer Season Training: Training will be provided primarily in paddy, maize, other summer crops and fruits and fishing, taking place from Mid-February to Mid-April.

5. Farmers' Day

A Farmers' Day will be arranged in order to teach progressive peasants about the research findings of the Government Agriculture Farms and Centres on improved seeds, fertilizers and manures, animals, birds and fruits. This will be done so that the farmers can see the demonstrations with their own eyes. It has been found that such Farmer's Days have had significant influence upon the farmers, especially since it is not possible to have all the farmers in one place and since the number of Agricultural Farms and Centres is limited. Farmer's Days will be held by transporting farmers to agricultural farms and centres from outlying districts. Since the quality is more important than the quantity of farmers, a maximum number of 100 progressive farmers from one district will be allowed to participate in Farmer's Day. Farmer's Day may also be held on the farm of a progressive farmer within the district.

6. Agricultural Fair and Exhibition

The agricultural project's model charts, posters, pictures, booklets, etc. are exhibited at the fair. The main objective of the exhibition is to attract the attention and interest of the farmers and to encourage them to use the improved farming methods. Such fairs and exhibitions create a competitive feeling among the farmers and provide encouragement to the large number of farmers impressed by the new techniques. Since such arrangements will involve large amount of money, effort, and time and since it is

not possible to arrange such fairs in all the districts, they will be arranged only in those districts possessing the necessary facilities. It is most essential to obtain the participation of farmers in the above type of exhibition. Competition will be held on the products raised by the farmers, including their domestic animals. The evaluation committee will decide the items for exhibition, as well as later judging them. The successful farmers will be awarded prizes of agricultural implements and booklets. This is mainly to arouse enthusiasm and interest among the farmers.

7. More Grain Production Competition

In the context of agricultural extension work, grain production competition will be conducted for the following purposes:

(a) To attract the farmers to the improved agricultural techniques;
(b) To create interest in greater grain production;
(c) To participate actively in agriculture extension work;
(d) To raise social prestige and to create a feeling of satisfaction among the farmers by increasing their productivity.

To fulfil the above purposes, competition will be held on the district and national level for paddy, wheat and maize crops each year. At present, it is not practical to have competition in all districts. Competition among the Hill and Terai districts will be in those districts which have been progressive in the adoption of improved agricultural techniques. The selected districts will then compete between themselves, and those standing first, second and third will be awarded prizes accordingly. At the district-level-competition, a minimum of ten farmers should participate. Before the contest, the selected disricts of Hills and the Terai will be put into various groups of two or three according to progress made in cereal crop development. These groups will then compete (separating hill districts and the terai districts) against one another. The Department will determine which districts stand first, second and third in a particular crop according to the records sent from the districts. Nine members from both the Hills and the Terai will compete at the national level on paddy, wheat and maize. The winning farmer will be recognized as the "largest cereal producer" at the national level and will be given letters of recognitions and certificates, as well as cash prizes.

8. Rural Youth Programme

The objective of the Rural Youth Programme is to convert rural youth between 10 and 21 years of age into literate and progressive farmers and to provide them with practical training in modern and improved methods of agriculture. For this purpose, 4-H Clubs will be organized for rural youth, and training will be provided to them on improved cultivation, animal husbandry, home science and small scale industry, under the guidance of the J.T., J.T.A. and other adult leaders who have been trained. Result-demonstrations on paddy, wheat, maize and vegetable crops will be done at each club. All the club members will, according to their training, interest, capacity and condition, undertake an agricultural project, and with their own efforts and funds proceed to complete their projects, thereby learning

and earning at the same time. They are also to engage in community service 4-H activities, festivals, cultivation programmes; tours, kitchen gardening, and other programmes.

9. Agriculture Information Programme

A programme for providing information to the maximum number of farmers on research findings and new techniques will be carried out. This will be done through the mediums of radio broadcasting, documentary films, exhibitions, audio-visual aids, publication of books and booklets, and agricultural news written in a simple language.

Food Research

The food research programme is being implemented with the objectives of conducting research on the nutritious value of available food stuffs and the provision of technical assistance to make the necessary arrangements for maintaining regular standards and quality of food stuffs for export and domestic consumption. A Food Research Laboratory has already been established for this purpose. Research works in the laboratory will be conducted in an effective way during the Fourth Plan period. In addition, research work will be undertaken regarding the production of nutritive food from industrial wastes and the preservation of food. A study survey on the nutritious elements of food will also be undertaken.

Resettlement Programme

There has been increasing population pressure on land, especially in the hilly regions of the country, as a result of natural increase and the lack of cultivable land. There has been a growing uncontrolled movement into the Terai forests because of malaria eradication. Because of these factors, a resettlement programme has become essential. The problem of resettlement has become more complicated due to an increasing influx of Nepalese from outside, including the ex-servicemen. In view of this, a Resettlement Company was set up in the year 1964 in order to settle landless farmers and their families in an organized and planned manner. So far, 2000 families have been settled on 5000 hectares of land at Nawalpur and Khajura. A Resettlement Department has also been recently established, thereby making implementation of this programme more extensive. It will be the responsibility of the Nepal Resettlement Company to carry-out comparatively big projects involving the resettlement of thousands of farmers. On the other hand, the resettlement of less than 200 families (including those who have encroached into the forest areas) will be undertaken by the Resettlement Department through the Zonal Resettlement Committees.

It has already been mentioned that additional cultivated land will be a significant contribution to the achievement of the target of food grains production for he Fourth Plan. It has been envisaged in the Plan to settle 8,000 families after reclaiming 25,000 hectares of land. The details of the resettlement programme to be implemented by the Nepal Resettlement Company and the Resettlement Department are given in the following two Tables:

TABLE 44

THE RESETTLEMENT PROGRAMME TO BE IMPLEMENTED BY NEPAL RESETTLEMENT COMPANY (Land to be reclaimed in hectares)

Zones	Districts	1970-71	1971-72	1972-73	1973-74	1974-75	Tot
Mahakali	Kanchanpur						
Seti	Kailali	2,500	1,875	3,750	3,750	—	11,8
Bheri	Banke						
	Bardia	625	500	1,000	1,000	—	3,1
Mechi	Jhapa	750	1,125	937.5	937.5	—	3,75
	Total	3,875	3,500	5,687.5	5,687.5	—	18,75

TABLE 45

THE RESETTLEMENT PROGRAMME TO BE IMPLEMENTED BY RESETTLEMENT DEPARTMENT

(land to be reclaimed in hectare

Zones	Districts	1970-71	1971-72	1972-73	1973-74	1974-75	Total
Lumbini	Kapilvastu						
	Rupandehi	500	500	500	500	500	2,50
	Nawalparasi						
Narayani	Bara, Parsa &						
	Rautahat	312.5	250	250	250	187.5	1,25
Janakpur	Sarlahi	312.5	250	250	250	187.5	1,25
Koshi	Morang, Sunsari	312.5	250	250	250	187.5	1,25
	Total	1,437.5	1,250	1,250	1,250	1,062.5	6,25

Agri-Economic Research and Studies

It has been difficult to formulate and properly implement policies and plans for agricultural development because of a lack of basic studies and research work. At present, data on agricultural production and area under cultivation are available. There is, however, a lack of data regarding capital formation in agriculture, wage rates of seasonal labour, the marketing of agricultural products, income elasticity of demand for food, input-output relationships in agriculture, the feasibility of agro-based industries, and evaluations on the impact of land reform, agricultural extension, agricultural education and research programmes. Therefore, a programme for the collection of these data has been included in the Fourth Plan.

Outlay on Agricultural Development Programme

Details of the programmes to be implemented during the Plan period are given in the Appendix. The allocation of financial resources for these programmes under the concerned departments is as follows:

Programme	(Outlay Rs. in '000)
1. Agricultural Extension	3,82,00
2. Agricultural Education & Research	5,49,00
3. Livestock Development & Veterinary Services	2,45,00
4. Fishery Development	1,02,00
5. Horticultural Development	1,29,00
6. Food Research	30,00
7. Resettlement:	
(a) Department	29,00
(b) Company	2,60,00
8. Agri-Economics	20,00
9. Dairy Development	1,23,00
Total	18,69,00

AGRICULTURAL PROJECTS

Title of Projects	Situation	Target (Production)			(Outlay Rs in, 1000)
1	2	3			4
(A) **Livestock Development and Veterinary Service**					2,45,00
1. Livestock Development farm, Khumaltar	Continuing	Cow-Calves (in No.)		142	45,00
		Buff-Calves	"	166	
		Lambs & kids	"	204	
		Pigs	"	2,000	
		Milk	Litre	300,000	
2. Livestock Development Farm, Rampur	"	Cow-Calves (in No.)		162	15,00
		Buff-Calves	"	229	
		Kids	"	160	
		Pigs	"	1,500	
		Milk	Litre	3,87,800	

3. Livestock Development Farm, Tarahara	"	Cow-Calves (in No.)		119	15,00
		Buff-Calves	"	164	
		Pigs	"	2,200	
		Kids	"	120	
		Milk	Litre	2,83,000	
4. Livestock Development Farm,Pokhara	"	Buff-Calves (in No.)		48	15,00
		Sheep	"	960	
		Goats	"	150	
		Pigs	"	450	
		Milk	Litre	48,000	
5. Panchsaya Khola Sheep Farm, (Nuwakot District)	"	Lambs	(in No.)	840	5,00
		Wool Production	Kg.	2,000	
6. Chitlang Sheep Breeding Centre	"	Lambs	(in. No.)	400	2,50
7. Jumla Sheep Farm	"	Lambs	"	1,400	2,50
8. Nepalgunj Livestock Development Farm	Proposed	Cow-Calves (in No.)		90	25,00
		Buff-Calves	"	90	
		Kids	"	120	
		Pigs	"	540	
		Milk	Litre	180,000	
9. Taplejung Livestock Development Farm	"	Cow-Calves (in No.)		15	17,00
		Buff-calves	"	15	
		Kids	"	840	
		Pigs	"	60	
		Milk	Litre	30,000	
10. Jiri Livestock Development Farm	Continuing	Not available			12,00
11. Artificial Insemination	"	Cows and she-buffaloes (in number)		198,000	20,00
12. Pasture Development	Proposed	Establishment of high Yielding Grass-seed Production Centres (Khumaltar, Rasuwa, Ramechhap, Rapti, Biratnagar, Jumla)			15,00
13. Central Hatchery Farm, Parwanipur	Continuing	Chicken Production (in number)		300,000	19,00

14. Kathmandu Brooder & Hatchery Farm	"	Chicken Production (in number)	100,000	8,00
15. Tarahara Brooder & Hatchery Farm	"	Chicken Production (in number)	1,00,000	7,00
16. Singha Durbar Poultry Project	"	Vaccination No.	3,00,000	4,00
17. Poultry Brooder Unit Proposed		Opening of three new Brooder Units each with 10,000 Capacity (Pokhara, Nepalgunj and Bhairahwa)		3,00
18. Veterinary Services (Building construction Only)	Continuing	Opening of 7 new veterinary centres (Taplejung, Ramechhap, Rasuwa, Bajura, Rukum, Sankhuwasabha, Darchula)		10,00
19. (a) Veterinary Research Laboratory, Kathmandu	"	Production of different vaccines required for the whole kingdom		11,75
(b) Disease Investigation Unit, Kathmandu	Proposed	Establishment of one diagnostic laboratory to provide appropriate treatment for protection and control of possible disease of cattle and birds through the laboratories under Zonal Veterinary Centres.		
20. Carcass Utilization Project, Hetauda	Continuing	Production of fertilizers from by-products available through slaughter-house and waste carcass and to provide training on carcass utilization, skinning, curing and processing.		25
21. Feed Mixing Plant Hetauda	"	Production and sale of 2500 Metric Tons of balanced feed per annum.		
22. Dairy Development				1,23,00
(a) Kathmandu Milk Distribution Centre	"	1. Expansion in Capacity 2. Expansion of annual production capacity to 300,0000 Litres.		400
(b) Milk Distribution Centres:	Proposed			7,800

1. Biratnagar	"	1. Establishment of Centre 2. Annual production capacity to 150,000 Litres.		
2. Nepalgunj	"	1. Completion of centre establishment by the end of fourth year 2. Production of 1,000,000 litre milk per annum.		
3. Birgunj	"	1. Completion of the project in the fifth year. 2. Production of 1,000,000 litre milk per annum.		
(c) Cheese Production Centres 5	"	1. Establishment of 5 Centres		700
2	Continuing	2. Cheese Shelters as required 3. Cheese Production 50 Metric Tons per annum.		
(d) Butter Production Centre (Two places within Parsa, Bara, Rautahat and Ilam)	Proposed			3,400
(B) Fishery Development	Continuing	1. Establishment of 2 Centres		10,200
1. Bagmati Fishery Development		a. Extension of Fish Farming & Distribution of fingerlings on continuation		15,00
		b. Survey of artificial impondation in Eastern Terai		
		c. Preparation of study reports of Trisuli and Tadi-Khola		
		d. Economical and biological study of Narayani & Bhotekosi		
		e. Study of Fingerlings production ard artificial breeding of Ashala and Mahasher		
2. Godavari Fish Development Centre	Continuing	1. Production of fingerlings (in number) 5,00,000 2. Table Fish production 2,770 Kg. 3. Production of fingerlings		5,00

		of Grasscarp and Silvet-carp (in number) 140,000 4. Testing and artificial breeding of Ashala.	
3. Janakpur Fishery Development Centre	"	1. Production of Fingerlings (in No) 9,60,000 2. Table Fish Production 3,700 Kg. 3. Extension Villages 200 4. Artificial Breeding of Silver carp and Grass carp 90,000 5. Collection of local fish, artificial impondation survey and data collection	6,00
4. Pokhara Lake Development Centre	Continuing	1. Production of fingerlings (in No.) 3,80,000 2. Trail Fishing (Kg.) 28,000 3. Extension Villages 120 4. Boat making (in No.) 17 5. Organising of Public Co-operative Society to teach fish farming 6. Table Fish Production (Kg.) 37,000	6,00
5. Fish Breeding and Distribution Centre	Continuing		
(a) Tarahara	"	1. Production of ngerlings (in No.) 8,95,000 2. Table Fish Production Kg. 2,800 3. Extension Villages 200 4. Breeding of fingerlings of Silvercarp and Grasscarp 40,000 5. Local Fish and impondation survey	4,00
(b) Parwanipur	"	1. Production of fingerlings (in No.) 10,00,000 2. Production of Table Fish Kg. 3,100 3. Extension villages 200 4. Breeding of fingerlings of Grasscarp and Silvercarp 80,000	5,00

		5. Survey and collection of local fish 6. Construction of additional ponds	
(c) Bhairahwa	Continuing	1. Production of fingerlings (in No.) 6,30,000 2. Production of Table Fish Kg. 2,800 3. Extension Villages 200 4. Grass carp & Silver carp breeding (No.) 35,000 5. Local fish collection and impondation survey 6. Construction of pond	4,00
(d) Nepalgunj	Proposed	1. Completion of Survey and Construction 2. Production of fingerlings (in No.) 1,45,000 3. Production of Table Fish Kg. 900 4. Extension Villages 80	4,00
(e) Rajbiraj	"	1. Completion of Survey and Construction 2. Production of fingerlings (in No.) 1,45,000 3. Production of Table Fish Kg. 900 4. Extension Villages 80	4,00
(f) Kathmandu Central Hatchery	Continuing	1. Completion of Construction 2. Fingerlings Production (in No.) 18,50,000 3. Grass & Silver carp Breeding (No.) 4,20,000 4. Breeding test of Ashala and Mahasher	4,00
(g) Trout Hatchery Lamtang	"	1. Completion of construction 2. Artificial breeding (in No.) 2,25,000 3. Dropping of fingerlings in rivers of northern side & Trisuli and study of their growth (in No.) 1,25,000	5,00

6. Large Scale Fish Farm			
(a) Eastern Terai	Proposed	1. Completion of construction by the end of second year (Hec.) 54.42 2. Fingerlings production (in No.) 7,75,000 3. Table Fish Production Kg. 60,000	20,00
(b) Western Terai	Proposed	1. Completion of construction in Third Year (Hec) 54.42 2. Fingerlings Production (in No.) 4,00,000 3. Table Fish production Kg. 15,000	
7. Large Scale Fish Farm	Continuing	1. Fingerlings Production (in No.) 21,50,000 2. Table Fish production Kg. 1,70,000 3. Grass carp and Silver carp breeding (in No.) 2,95,000 4. Extension Villages 40	10,00
(a) Hetauda	"		
(b) Rapti	"	1. Fingerlings production (in No.) 20,00,000 2. Table Fish Production Kg. 1,45,000 3. Grasscarp and Silver-carp Breeding (in No.) 1,60,000	10,00

(C) HORTICULTURAL DEVELOPMENT

1,29,00

(Rs. in Thousand)

Name of the Project	Situation	Number of fruit root-stocks in '000	Number of fruit plants in '000	Vegetable seeds in kg.	Potatoes Metric Tons	Expen-diture
1	2	3	4	5	6	7
1. Horticulture Research Centre, Kirtipur	Continuing	4,25	2,20	24,000	—	8,29
2. " " " Dhankuta	"	3,80	2,20	12,500	50	5,00
3. " " " Pokhara	"	1,25	1,00	5,000	20	4,00
4. " " " Damari	"	3,00	2,00	2,000	—	2,50
5. " " " Helambu	"	1,25	37	250	25	2,50
6. " " " Satbajha Baitadi	"	1,00	62	2,000	5	2,50
7. " " " Janakpur	"	43	19	17,000	10	2,20
8. " " " Dhunibesi (Dhading)	"	50	50	500	—	2,25
9. " " " Thakmarpha	"	25	15	15,000	5	2,50
10. " " " Trisuli	"	15	75	500	—	2,25
11. " " " Jumla	"	1,90	95	700	18	250.
12. " " " Tarahara (Sunsari)	"	1,30	1,80	3,000	10	4,39
13. " " " Parwanipur	"	2,00	1,25	1,500	—	2,72
14. " " " Bharatpur	"	90	3,00	50,000	100	5,00
15. " " " Humla	Proposed	25	12	—	10	2,50
16. " " " Palpa	Continuing	12	15	2,75	—	2,25
17. " " " Mustang	Proposed	28	12	—	10	2,25
18. " " " Rasuwa	"	28	12	—	10	2,25

19. Plant introduction Singha Durbar Godawari		Continuing	3,80	1,35	2,500	—	5,00
20. Fruit Centre Kakani		"	2,20	1,25	—	37	3,00
21. Potato Development Project	Ilam	"	70	23	—	720	16,40
22. " " "	Kirtipur	"	—	—	—	150	3,00
23. " " "	Daman	"	—	—	—	375	4,00
24. Fruit presevation Centre	Kirtipur	"	Production of 30,000 kg. Preserved fruit	—	—	—	2,25
25. Large Scale Horticultural Development Programme:							
(a) Prithvi Rajmarg		Proposed	40 Hectares	—	Establishment of	—	35,00
(b) Araniko Rajmarg		"	"	—	Horticultural Farms	—	
(c) Simra-Janakpur (Mahendra Rajmarg)		"	120 "	—	"		
26. Vegetable Nucleus Seed Production Project, Yagyapuri, Kathmandu		"			Seed Production Vegetable Nucleus 40 Hectares land		2,50

(D) Agricultural Education and Research			5,49,00
1. Agri-Botany			30,00
(a) Agri-Botany Section	Continuing	Acquisition of 4 hectares of land for construction of Botanical building and greenhouse	
(b) Crops Improvement (Bagmati, Narayani, Janakpur, Kosi, Bheri, Lumbini, Seti, Sagarmatha & Mechi)	"	1. Testing of different varietal crops 93 2. Collection of varied crops and primary analysis of qualities (number) 4,900 3. Collection of varied crops 1,910 4. Testing of collected varieties 3,800 5. Main seed Production Kg. 19,700 6. Breeding seed production (Kg.) 1,200	
(c) Seed Testing & Development, (Lalitpur)	"	1. To increase seed sample analysis capacity upto 23,000 2. Crop inspection in 27,00 hectares field 3. 14,500 MT. seed certification 4. Study of 15 varieties of seed	
(d) Collection, classification & analysis of various crops (Bagmati, Narayani)	"	1. Collection, classification & analysis of 750 varieties of paddy and 500 varieties of grass 2. Survey & analysis of seeds suitable to 60 varieties of leguminous crop and green-manure	
(e) Oil-seeds and Pulse-seeds improvement (Khumaltar & Rampur Agricultural Centres)	Proposed	1. Survey and collection of 350 varieties 2. Primary analysis on quality of 275 varieties	

2. Crops seed development Project, (Kathmandu Valley and Hetauda)	"	1. Arrangement of certification of seed production of different types of crops 2. Formulation of policy and rules on certification of the seeds 3. Establishment of seed testing laboratory in Khumaltar and seed purifying Machine in Hetauda 4. Selection of Progressive Producers	68,00
3. Agriculture College, Jagadamba Krishi Bhawan, Pulchowk, Lalitpur	Continuing	Number of Trained Personnel 1. I. Sc. 225 2. B. Sc. 25 3. Field Training 500 4. Upgrading Training 340 5. J. T. A. 700	35,00
4. Agronomy Science Agri-Farms (a) Khumaltar (b) Janakpur (c) Nepalgunj (d) Doti	"	1. Introductory Study, Number of crops 120 2. Testing 285 3. Improved seed Production (M. T.) 10,07 4. Cash Crop Development (M. T.) 13,58 5. Experimentation of crop varieties 85 6. Crop rotation Study 5 7. Green Manure Study 7 8. Agri-Education & Training 15 9. Agri-Services 10 10. Jute Farm (M. T.) 31 11. Hilly Agri.Farm(M.T.) 26 12. Extension of Jute Farm & Hilly Agri-Farm	72,00
5. Agriculture Engineering (a) Agri-Engineering construction Continuing project, Kathmandu		1. Design estimate of the agri-engineering construction 250 lakh 2. Pucca graineries desing 15 3. Other graineries design 15	4,000

(b) Agriculture Implements & Tools (Research & Repair) Project, Kathmandu, Birgunj	"	1. Repair of Transportation means 500 2. Repair of Tractors and others 100 3. Formulation of irrigational structure and Research 25 4. Specimen of Graineries 10 5. Training on Tools 160 6. Demonstration of Tools 40 7. Specimen of driers 2 8. Specimen of Tools 15	
(c) Farm Development & Irrigation Research Project, Agri-Farms and Research Centres	Proposaed	1. Study of irrigation for Wheat, Maize and Sugarcane Crops 10 2. Agri-Training 1,000 3. J.T.A. Surveyor Training 50 4. Farm Tubewell 3 5. Farm Channel design 5	
6. Entomology Research			22,00
(a) Khumaltar, Biratnagar & Parwanipur only	Continuing	1. Research Survey hectare 20,000 2. Collection & experimentation (Insects) 20,000 3. Preservation (Insects) 500 4. Chemical Test of Silkworm & beekeeping 5. Plant Protection Units 5	
(b) Plant Quarantine Kathmandu, Birgunj, Bhairahwa & Nepalgunj	"	1. Completion of Legalisation Biratnagar 2. Establishment of plant quarantine laboratory in Kathmandu 3. Establishment of 5 check-posts	10,00
7. Plant Pathology Section			22,00
(a) Central Laboratory Kathmandu	"	1. Survey of diseases in	

			hectare 1,00,000 2. Disease Collection (Number) 5,000 3. Disease Control Study 97 4. Disease Experimental Study 500 5. Disease Study seeds 1,000 6. Publication 20 7. Demonstration 60 8. Training 1,000 9. Advice on diseases 1,000	
(b) Plant Protection Centre and Laboratory	Continuing	1. Establishment of new centres 4 2. Establishment of regioval laboratory 2 3. Disease Collection 1,000 4. Disease control 20 5. Demonstration 400 6. Training 100 7. Advice on diseases 2,000		
8 Soil Science Section				22,00
(a) Soil Science Central Laboratory	"	1. Soil Survey in 22 districts. (in Hec.) 3,427,910 2. Soil analysis No. 40,000 3. Fertilizer Experimentation fields 34 4. Publication 25		
(b) Field Soil Fertility Section & laboratory (Parwanipur, Tarahara, Bhairahwa, Rampur, Jiri, Janakpur, Nepalgunj & Doti)	Proposed	1. Fertilizer Experimentation (in 8 centres) 207 2. Soil analysis 3,900		8,00
(c) Soil Fertility Research and promotion of Fertilizer use	"	1. Fertilizer Experimentation in 7 places of Terai & Hilly areas 1000 every year 2. Pilot Project 2 3. Laboratory (Parwanipur) 1		1,55,00

(d) Agriculture Centre: Parwanipur, Rampur, Biratnagar and Jute Farm Bhairahwa	Continuing		65,00
(E) Agriculture Extension			3,82,00
1. Agricultural Extension Programme		Programme No	30,000
		Method Demonstration 45,000	
		Result " 2,13,000	
		Leader Farmers Training 21,500	
		Trained Leader Farmers 2,25,000	
		Seasonal Training for J. T.s. & J. T. A.s. 2,000	
		Farmers' Day 149	
		Farmers to participate the Farmers' Day 14,900	
		Agricultural fair & exhibition 125	
		Grow more food competition 168	
		District competion 504	
		National" 5	
		Estimated number of farmers participating the competition 5,600	
2. Rural Agriculture Youth Programme	"	Panchayat 511,	
		Club 771,17,00	
		Trained member 11,563,	
		Adult Guide 771,	
		4-H leaders'Training 2200,	
		Result Demonstration 9,153,	
		Individual project to be implemented by trained members 26,908.	
		Team Training for method demonstration 3084.	
		Judging Team Training 3084,	
		Community services 7175,	
		District 4-H. Festival	

		day	110	
		Zonal 4-H. Festival day	13	
		National 4-H. Festival day	5	
		Grow more vegetable campaign	25	
3. Agri-Information Section	Continuing	Booklet Publication	570 type	15,00
		Poster "	200 "	
		Radio Programme	1248 times	
		Movie Demonstration	570 "	
		Agri-Information	8700 sheets	
		Agri-Demonstration	34 times	
		Movie Preparation	12	
4. Gandaki Agriculture Development Project	"			50,00
(F) Food Research				30,00
1. (a) Babar Mahal, Kathmandu	Continuing	1. Construction of Food Research Laboratory 2. Continuation of food material analysis 3. To impose food policy		
(b) Food Technological Pilot Plant Work-shop Kathmandu	"	1. To test the successful purification of the available raw food material 2. Preparation of protenous food from industrial wastage material 3. To provide Technological Training and advice		15,00
2. Food Testing Laboratory, Jhapa	"	Continuation of Testing, data collection and rice milling		10,00
3. Survey and Research on food protein	Proposed	1. Survey on country's food and its protein contents and data collection 2. Analyse the protein of available food material and		5,00

publishing the balanced diet.

(G) Resettlement:				
Departmental Programme				29,00
1. Zonal Resettlement Proposed (Morang & Sunsari).		in 1250 hectares 450 families	6,70	
2. Zonal Resettlement Narayani	"	in 1250 hectares 450 families	6,75	
3. Zonal Resettlement Lumbini	"	in 2500 hectares 900 families	6,80	
4. Zonal Resettlement Janakpur	"	in 1250 hectares 450 families	6,75	
5. Reclaimation	"		2,00	
Company's Programme				2,60,00
Resettlement in Kanchanpur, Kailali, Banke, Bardia & Jhapa	"	1. Families to be settled 6000 2. Land to be distributed 20408 hectares		

(h) Study and Research on Agri-Economics **20,00**

1. Study on agricultural seasonal workers and their wages.
2. Study on agricultural capital formation.
3. Detailed study on main agricultural products.
4. Family survey of rural areas (source of income and consumption).
5. Feasibility study on agro-based industries and their problems.
6. Evaluation of land reform programme.
7. Preparation of final report of the survey on Farm Management conducted in the year 1969/70.
8. Study on the effect of Agriculture Extension, Education and Research in the agricultural production.
9. Feasibility study on fruit market and fruit-based industries.
10. Study on the development of livestock and fisheries, including study on production and marketing of livestock products.

CHAPTER VI

Agricultural Credit, Inputs and Marketing

It is evident that the achievement of the agricultural development programme targets depend primarily upon the efficiency of hundreds of thousands of farmers. In order to enable the farmers to increase production and to adequately use modern agricultural inputs, it is urgently necessary to provide credit on easy terms. At present, cooperative societies, Agricultural Development Bank, Savings Corporation and Ward Committees are supplying agricultural credit. There is, however, a lack of scientific organization, an inefficient administration with minimum direction and control and a lack of clearly defined fields of activity and responsibility. This has, in turn, created obstacles in the provision of credit to farmers. Based upon actual experience gained so far, the following arrangements will be made for the supply of credit, inputs, and marketing facilities in those districts where intensive agricultural development programme will be implemented during the Fourth Plan period:

1. Instead of establishing new organizations to supply institutional agricultural credit for inputs at the village level, the existing institutions will be strengthened, i.e., Cooperatives, the Agricultural Development Bank, the Land Reform Savings Corporation, and the Agriculture Supply Corporation and Ward Committees.

2. Village Committees will be entrusted with the collection of Compulsory Savings at the village level, the provision of individual agricultural credit, the sale of improved seeds, chemical fertilizers and other inputs in all 28 districts where the Intensive Agriculture Development Programme will be implemented. All records of the financial transactions and marketing operations of Village Committees will be kept by the secretaries of the concerned Village Panchayats. The Land Reform Savings Corporation will depute 344 credit inspectors and establish 14 regional offices in order to supervise and guide the Village Committees. When these Village Committees are efficient enough to run on their own, the Committees will be converted into Village Multipurpose Cooperative Societies, and the compulsory savings, subject to the approval of deposits, will be transformed into the share capital of the society. Thus when the committees are converted into Multipurpose Cooperative Societies, the Cooperatives will be reorganized at the inter-village level in the following

way. In the interim period, Village Committees will function only as agents of the Inter-Village Cooperative Organization and will sell agricultural inputs to the farmers of the village on the basis of a prescribed commission. The Land Reform Savings Corporation will provide general agriculture production loans through village committees on commission as at present. His Majesty's Government will provide grants to the Land Reform Savings Corporation for the administrative expense of Credit Inspectors who will be supervising Village Committees.

3. The Department of Cooperatives will establish up to 10 inter-village cooperative organizations after reorganizing in stages the existing cooperatives in the 28 intensive districts. The Cooperative Institutions, thus re-organized, will receive guidance and administrative support from the Agricultural Development Bank. During the plan period, the Department will set up offices in those districts with cooperative institutions and will provide facilities for supervision and audit. Trained persons will be posted by the Agricultural Development Bank in such institutions to work as managers of the cooperative organizations. His Majesty's Government will provide grants to the Agricultural Development Bank to cover the administrative expenses of such persons. The cooperative institutions organized at the inter-village level will provide credit to their members, and, acting as agents of the Agricultural Supply Corporation, they will supply agricultural inputs through the Village Committees and undertake the marketing of agricultural products of the concerned village panchayats.
4. At the district level, the Agrictultral Development Bank will establish branches for the overall supervision of financial transactions and the provision of individual loans to farmers for larger undertakings. Similarly, the Agricultural Supply Corporation will establish its offices at the district level in order to provide agricultural inputs and marketing facilities. At the village level, the re-organized cooperative organizations, acting as agents of the corporation, will undertake the marketing of these inputs.
5. In the districts where the Intensive Agriculture Development Programme will not be implemented, the programme in this field will continue as in the past.

A. Cooperatives

The cooperative system was introduced in the country during the first Plan period. The increased number of societies indicates that there has been remarkable progress in this field. During the 12 year period the number of cooperatives has increased to about 1,300. These cooperatives were not developed merely by those people who accept the principles and ideal of the cooperative movement. They were formed primarily by the Department of cooperatives with government grants. Therefore, the existing cooperatives lack sufficient funds, members, knowledge, and efficiency of management. Hence, it was natural that these fast growing cooperatives would not have the anticipated qualitative development. Out of the 1,300 existing cooperative societies, about two thirds of the 1,100 concerned with agriculture are

ineffective and are in the process of liquidation. Of the rest, some need promotional measures, whereas, others need to be amalgamated. Therefore, it is envisaged in the Fourth Plan to re-organize the existing societies and to concentrate on quality rather than quantity.

Programme in the Fourth Plan

In view of the lack of technical personnel, resources, and managerial skill at the Village level, it is impracticable to establish cooperative societies simultaneously throughout the country. It is, therefore, envisaged in the Fourth Plan to establish up to 10 well-organized societies after reorganizing and amalgamating the existing cooperatives in each of the 28 intensive distficts. Since each society thus established will cover more than one village, they will be called inter-village cooperative societies. As stated above, the management of these societies will be supervised for the required period of time. These societies will concentrate their activities primarily on the provision of credit to the member farmers, the supply of agricultural inputs through village committees, and the marketing of agricultural products in an organized way so that the farmers can get proper remuneration for their labour. When the village committees are converted into village multipurpose cooperative societies, they will then become members of the inter-village cooperative organization. When cooperatives at the village level are functioning smoothly and effectively, inter-village cooperatives will be amalgamated, and then only one organization will be constituted at the district level.

In the first year of the Fourth Plan, at least two inter-village cooperative organizations will be established by the amalgamation or re-organization of the existing societies in the 28 intensive districts. Cooperative societies thus re-organized will be established in each district as required by the end of the Plan period.

Although cooperatives have been introduced in 56 districts of the country, the Fourth Plan gives priority to the 28 districts, where the Intensive Agriculture Development Programme will be implemented. They will be strengthened by providing trained personnel, such as cooperative inspectors, accountants, and others. In the Central Office, the audit section will be made more effective and efficient. In addition, a separate section to deal with agricultural marketing will be established at the central level. If agricultural production is not marketed in accordance with cooperative principles and the farmers are not guaranteed fair prices, agricultural production is likely to be adversely affected.

Theoretical and practical training of 3 to 6 months duration and a short-term in-service training programme will be continued by the Cooperative Training Centre for departmental personnel and managers of cooperative societies. Moreover, mobile training teams for the districts will provide short-term practical training to the members and staff of the cooperative organizations.

B. Agriculture Supply Corporation

Among the inputs required to achieve the targets of the Fourth Plan, chemical fertilizers, improved seeds, pesticides, and improved implements will be supplied mainly by the Agriculture Supply Corporation. The amount of different inputs to be sold during the Plan period by the Corporation is given in the following Table:

TABLE 46

CHEMICAL FERTILIZER TO BE SOLD DURING THE FOURTH PLAN PERIOD
(Nutrient in M. T.)

Fertilizer	1970-71	1971-72	1972-73	1973-74	1974-75
Nitrogen	5,930	9,000	11,000	13,000	15,000
Phosphorus	2,360	4,500	5,500	6,500	7,000
Potash	390	1,200	1,600	2,200	3,000

TABLE 47

SALE OF IMPROVED SEEDS DURING THE FOURTH PLAN PERIOD

(In M. T.)

Seed	1970-71	1971-72	1972-73	1973-74	1974-75
Maize	136	204	306	408	510
Wheat	546	780	1,092	1,326	1,510
Paddy	400	600	800	1,100	1,400

TABLE 48

DURING THE FOURTH PLAN PERIOD

SALES TARGET OF AGRI-TOOLS AND PLANT PROTECTION MATERIALS
(Rs in THOUSAND)

	1970-71	1971-72	1972-73	1973-74	1974-75	Total
Agri-Tools	775	1,100	1,425	1,750	2,225	7275
Pesticides	375	525	780	1,000	1,250	3930

At present, the Agriculture Supply Corporation has its central office at Kathmandu with six branches in Kathmandu, Birgunj, Janakpur, Biratnagar, Bhairahwa and Nepalgunj; nine depots in Chituwan, Rautahat, Sarlahi, Saptari, Sirha, Jhapa, Taulihawa, Pokhara and Bardia and four seasonal supply centres in Parasi, Dang, Kailali and Palpa. During the Fourth Plan period, sales depots will be established in all 28 districts where the Intensive Agricultural Development programme will be implemented. These depots will provide the necessary agricultural inputs and supply the chemical fertilizers, improved seeds, polythene bags, to the iner-village cooperative organisations and village committees.

Warethouses

Warehouses are under construction in Kathmandu and Birgunj to cope with the increasing volume of trade. During the Third Plan period, with the completion of warehouses for fertilizers and seeds, the corporation

will have warehouses with a capacity of 2,500 M.T. 2,000 M.T. and 1,000 M.T. respectively at Birgunj, Kathmandu and Bhairahawa. During the Fourth Plan Period warehouses will be constructed as needed in the 28 districts where the Intensive Agricultural Development Programme will be implemented. The expenditure required to implement the above mentioned programmes is given in the following Table:

TABLE 49

EXPENDITURE REQUIRED FOR AGRICULTURAL INPUTS DURING THE FOURTH PLAN PERIOD

(Rs in '000)

Implements	1970-71	1971-72	1972-73	1973-74	1974-75	Total
Chemical Fertilizer (NPK)	15,000	25,000	31,500	37,200	43,000	151,700
Seeds	1,520	2,150	3,040	4,050	4,920	15,680
Plant Protection Materials	375	525	780	1,000	1,250	3,930
Agricultural Tools	775	1,100	1,425	1,750	2,225	7,275
Total	17,670	28,775	36,745	44,000	51,395	178,585

TABLE 50

EXPENDITURE REQUIRED FOR WAREHOUSE CONSTRUCTION DURING THE FOURTH PLAN PERIOD

(Rs in '000)

	1970-71	1971-72	1972-73	1973-74	1974-75	Total
Storage and other facilities	1,000	1,500	2,500	1,800	1,200	8,000

TABLE 51

ADMINISTRATIVE EXPENDITURE DURING THE FOURTH PLAN PERIOD

(Rs in '000)

	1970-71	1971-72	1972-73	1973-74	1974-75	Total
Administration	1,500	2,100	2,500	3,000	3,600	12,700

TABLE 52

FINANCIAL REQUIREMENT OF THE CORPORATION DURING THE FOURTH PLAN PERIOD

Rs. in '000

Heads	1970-71	1971-72	1972-73	1973-74	1974-75	Total
Inputs	17,670	28,775	36,745	44,000	51,395	178,585
Construction (Storage)	1,000	1,500	2,500	1,800	1,200	8,000
Administrative Budget	1,500	2,100	2,500	3,000	3,600	12,700
Total	20,170	32,375	41,745	48,800	56,195	199,285

TABLE 53

ESTIMATED REQUIREMENT OF FOREIGN EXCHANGE DURING THE FOURTH PLAN PERIOD

Year	US Dollar in '000
1970-71	1,580
1971-72	2,500
1972-73	3,150
1973-74	3,720
1974-75	4,300
Total	15,250

Of the total expenditure required to implement the above mentioned programmes, the entire expenditure for warehouses and 50 percent of administrative expenditures will be borne by His Majesty's Government. The financing required for the inputs will be met by internal sources and by loans from the Savings Corporation. It is evident that the foreign exchange facilities required for this purpose will be made available by His Majesty's Government.

Warehouses and Marketing

Because there is no institutional organisation for marketing and storing agricultural products, the actual farmer does not receive proper remuneration for his labour. With no facilities for storage, they are compelled to sell their products even when the prices are low. If essential marketing facilities are not provided, farmers cannot be induced to produce more. This is demonstrated by the increased production of wheat. In view of changes in the traditional export markets of food grains, it is necessary in Kathmandu valley to pay timely attention to exploring alternate markets elsewhere. Otherwise, it is possible that the target for increased production will be difficult to attain as a result of the lack of markets and decreased prices. A well organised Marketing and Warehousing Corporation will, therefore,

be established for this purpose during the Fourth Plan period. In the preliminary stage, this corporation will expand the external markets of agricultural products and provide facilities to the farmers for storage over given period of time. On the basis of agricultural products stored, farmers could get required credit from the Agricultural Development Bank, the Land Reform Savings Corporation or any other financial institution, and they could sell their products when market conditions become favourable. Since most of the improved seeds required during the Plan period will be produced by the farmers themselves, storage facilities can be provided to such farmers by the proposed Corporation.

Rupees 7.8 million in the form of share capital of His Majesty's Government has been allocated for this corporation in the Fourth Plan. If additional resources are required, requirements for share capital will be made available from Nepal Rastra Bank, Agricultural Development Bank, Land Reform Savings Corporation and other financial institutions. From the very beginning, the Corporation will construct warehouses from available resources at appropriate places in the country for its own use and the use of farmers.

Agricultural Credit

In order to achieve the targets of the Fourth Plan, agricultural credit of 220 million rupees over that which is mobilized in the private sector will be needed for the provision of various inputs, such as chemical fertilizers, improved seeds, plant protection materials required for cereals and cash crops, root stock, plants and seeds and other inputs for horticulture development, chicken, fingerlings and improved livestock for poultry, fisheries and livestock development. The Agricultural Development Bank and the Land Reform Savings Corporation are the main sources of agricultural credit and can provide credit worth 475.1 million rupees during the Plan period. Therefore, long-term credit worth Rs. 250 million can be made available to augment capital expenditure on implements, storage and minor irrigation projects for agricultural development in the private sector. Short term agricultural credit will be provided to the farmers in the intensive districts by the Land Reform Savings Corporation through the district offices and ward committees. Similarly, the Agricultural Development Bank will provide small loans to member farmers through cooperative Organizations and large scale credit for specific purposes directly through its district offices.

The details of agricultural credit supplied during the Third Plan period by the Agricultural Development Bank and the Land Reform Savings Corporation are given in the following Table:

TABLE 54

LOAN TRANSACTIONS

(Rs in '000)

	1966-67	1967-68	1968-69	1969-70
Agricultural Development Bank				
Loans	3,990	3,588	8,047	5,865*
Repayment	2,041	3,430	3,528	1,776*
Investment	4,604	4,762	9,195	13,370*
Land Reform Savings Corporation				
Loans	8,337	13,428	5,357*	13,826**
Repayment	—	8,058	5,719	4,628**
Investment	8,737	14,107	13,745	16,824**

* First 8 months only.
** First 6 months only.

The above Table shows that the Agricultural Development Bank has, on average, supplied annually more than Rs. 5.8 million of credit for various purposes. The Land Reform Savings Corporation has supplied about 10.0 million rupees.

During the Fourth Plan period, more than Rs. 470 million of credit will be provided by the Agricultural Development Bank and the Land Reform Savings Corporation. Annual details are given below:

TABLE 55

PROVISION OF CREDIT IN THE FOURTH PLAN

(Rs in 10 million)

	1970-71	1971-72	1972-73	1973-74	1974-75	Total
Agricultural Development Bank	1.25	2.00	3.00	4.50	6.50	17.25
Land Reform Savings Corporation	3.44	4.64	5.82	7.31	9.05	30.26
Total	4.69	6.64	8.82	11.81	15.55	47.51

It is estimated that the Land Reform Savings corporation will meet its requirements for credit from the sources given in the following table.

TABLE 56

ESTIMATE OF FINANCIAL RESOURCES

(Rs in '000)

Source	1970-71	1971-72	1972-73	1973-74	1974-75	Total
Savings	27,726	—	—	—	—	27,726
Loan repayment from institutional investments	6,519	31,059	29,255	34,670	55,078	156,582
Private Loan repayment	93	2,500	6,135	11,435	17,075	37,238
Interest to be paid to His Majesty's Government	—	7,000	3,000	3,000	3,000	16,000
From Financial institutions	100*	5,847	19,808	23,970	15,331	65,056
Total	34,438	46,406	58,198	73,075	90,484	302,602

* From the Reserve Fund.

Similarly, the Agticultural Development Bank will meet its requirements of credit from the sources given in the following table:

TABLE 57

SOURCE OF FINANCE IN THE FOURTH PLAN PERIOD

(Rs in '000)

Source of Finance	1970-71	1971-72	1972-73	1973-74	1974-75	Total
1. Share Capital						
(a) His Majesty's Government	—	2,500	2,500	5,000	—	10,000
(b) Individuals and Institutions	2,570	3,100	150	250	325	6,395
2. Deposits	700	1,000	1,250	1,800	2,500	7,250
3. Loan from Financial Institutions	8,064	6,167	15,066	20,219	34,064	83,580
4. Loan Repayment	1,666	7,733	11,534	18,731	29,111	68,775
Total	13,000	20,500	30,500	46,000	66,000	176,000

In order to achieve the approved agricultural targets of the Fourth Plan, the Agricultural Development Bank and the Land Reform Savings Corporation will provide credit on the basis of the annual programme through the concerned organisations or committees, as required for cereal crops, cash crops, horticulture, livestock and poultry and fisheries development. His Majesty's Government will provide grants amounting to 10 million rupees for the personnel expenses to the Agricultural Development Bank in order to operate the inter-village cooperative organisations and to the Land Reform Savings Corporation in order to supervise the Village Committees.

The estimated outlay required for implementing the above mentioned programme regarding agricultural credit, inputs and marketing during the Fourth Plan period, is as follows:-

Programmes		(Outlay Rs. in '000)
1. Cooperatives		40,00
(a) Cooperative Training Centres	2140	
(b) District Cooperative Offices	1860	
2. Agriculture Supply Corporation (Grants)		143,00
(a) Warehouse Construction	8000	
(b) Administrative expenses	6300	
3. Marketing and Warehousing Corporation (Share Capital)		78,00
4. Agriculture Credit		200,00
(a) Agricultural Development Bank (Share Capital)	10000	
(b) Agricultural Development and Land Reform Savings Corporation (grants)	10000	
	Total	4,61,00

CHAPTER VII

IRRIGATION

The water resources of the country are adequate for the development of irrigaion facilities. The three major river systems are Kosi, Narayani and Karnali. Before crossing the border they drain a total area of 141,190 sq. Kilometres or 83 per cent of the total catchment area of all the river systems of the country. These three rivers have their head waters in the main Himalayan range, and are perennial due to glacial origin. The minimum discharge of each river is 214 cubic meter per second, even during dry winter season. Besides the watersheds of these river systems, there are seven big rivers draining catchments between 1280 sq. k.m. and 6400 sq. k.m. These rivers are, from west to east —Sharada, Babai, Rapti, Bagmati, Kamala, Kankai and Mechi. These rivers are also perennial since the source of these rivers is either in the Himalayan or Mahabharat ranges. In addition, there are several small streams which have their origin in the Chure hills. Among these small streams are the Banganga, Tinau, Balan and Trijuga. They have catchment areas varying from 256 sq. k.m., to 768 sq. k.m.

Progress in Irrigation Development

Prior to the First Five Year Plan, only 14,700 hectares of land are recorded to have had irrigation facilities provided by the government. Irrigation facilities for an additional 17,200 hectares were provided during the First Plan Period. During the Second Plan Period, 26,500 hectares of land were brought under irrigation. Thus before the beginning of the Third Plan total irrigation facilities provided by the government covered an area of 58,400 hectares of land.

The revised target of the Third Five Year Plan was to provide irrigation facilities for 148,000 hectares of land. During the four years of the Plan period, in other words by the end of 1968-69, irrigation facilities have been provided to 59,090 hectares of land by the completion of the following projects:

1. Khageri Irrigation Project	—	6,000 Hec.
2. Tokha Irrigation Project		290 Hec.
3. Sange Patni Tar Irrigation Project	—	500 Hec.
4. Sisaghat Tar Irrigation Project	—	350 Hec.
5. Dedgaun Tar Irrigation Project	—	350 Hec.
6. Minor Irrigation Project	—	51,600 Hec.
		59,090 Hectares.

Objectives, Policies and Priorities of Irrigation Development in the Fourth Plan

Objectives

The irrigation programme in the Fourth Plan is formulated to reach the following objectives:

(a) To provide irrigation facilities as required for the agricultural development projects;

(b) To gradually reduce dependence on uncertain monsoon and thereby increase agricultural production by creating opportunities for growing more than one crop.

Policy and Priority

In accordance with the above objectives the following policies and priorities are adopted for the Plan period:

1. During the past few years special attention was given to the development of minor irrigation projects. Therefore, medium and major irrigation projects were not given proper attention. Since a considerable part of the irrigation facilities provided so far have been minor projects, it is evident that such projects are not suitable for meeting long-term irrigation requirements. Since construction of major irrigation projects depends upon external aid, the timely development of irrigation potential, has not become available for the development of agriculture. His Majesty's Government will have to pay special attention to these considerations in order to implement some major irrigation projects during the Fourth Plan period.

2. There are some projects which have been started but not completed during the Third Plan, but will be completed in the Fourth Plan. Two of these projects are the Gandak and Chatra Canals which are being constructed directly by the Indian Government and will be completed and made available during the Plan period.

3. In order to utilize ground water, tube-well projects also will be implemented as required. Feasible minor irrigation projects will also be implemented during this plan period.

4. Along with the constructions of continuing and newly proposed projects, feasibility studies of various projects will be undertaken in order to prepare future plans. At the same time, renovation and extension of old projects will be continued. River control and reclamation projects will also be implemented to prevent losses during the rainy season.

5. Since there is no water management code for the effective use and protection of water resources available in the country, necessary steps will be taken in the Fourth Plan period to institute an appropriate water management programme designed to ensure the efficient construction, maintenance and operation of irrigation dams, canals and distributories. Permanent arrangement will be made with necessary coordination between the Departments of Agriculture and Irrigation.

6. Although all activities concerning irrigation were being carried out by one department until very recently, two seperate departments-Minor Irrigation Department and Irrigation Department have been established. This has greatly increased administrative expenses, added to the problem of coordination, and caused confusion in deciding the function of each department. It is appropriate, therefore, to re-unite these departments as before, in order to implement the irrigation programme more effectively.

Irrigation Development Programme in the Fourth Plan

The irrigation programme in the Fourth Plan has been determined in accordance with the priority of irrigation policy and the targets of agricultural production. Accordingly, irrigation facilities will be provided to 183,632 hectares of land during the Plan period. Detailed programmes are given below:

(a) Major Irrigation Programme

Since all projects cannot be completed within the Plan period, only 146,700 hectares of land will be provided with irrigation facilities by the end of the Plan.

1. Sharada Irrigation Project

Having constructed a weir near Mahendranagar in Kanchapur district, the Indian Government is already utilizing water from the Mahakali river (which is called Sharada in India) for the production of power and irrigation. Under provisions of the agreement between His Majesty's Government and the Indian Government regarding this project, India has now agreed to supply 460 cusecs of water for irrigation in Nepal. This project is therefore, included in the Plan.

The construction work of head regulator in the main dam will be undertaken by the Indian Government, while the canal systems will be completed by His Majesty's Government. The canal system are expected to irrigate 25,000 hectares of land in Kanchanpur and a part of Kailali district. The cost of this project is estimated at 1,80,00,000 rupees. According to the target, the project will be completed in the last year of the Plan period.

2. Kamala Irrigation Project

This project is expected to provide irrigation facilities to 28,000 hectares of Dhanusha and Sirha districts. Although the project was started in 1961, no progress was made after completion of the right canal. It is now envisaged in this Plan to start the consruction work during the third year of the Fourth Plan. Under this project it is proposed to construct a wier in the Kamala river near Chisapani village and to construct canals on both banks. The cost of the project is estimated at Rs. 5,50,00,000. A feasibility report of this project has been completed.

3. Lohattar Irrigation Project

Lohattar is a tributary of the Rapti river in Narayani Zone. The pro-

ject is expected to irrigate a total area of 12,000 hectares of land in th eastern part and a portion of the western part of Rapti Valley. The pro ject intends to utilize a total of 516 cusecs of water with the constructio of head-works in the Sano-Rapti, Budi Rapti and Dungriya rivers, as wel as the Lohattar. A feasibility report of the project has been completed an its total cost is estimated to be Rs. 2,97,50,000. The construction work o this project is expected to be completed in the last year of the plan. B the completion of this project and the Khageri Project (already completed) a large percentage of the cultivable land of Rapti Valley will be irrigated

4. Bagmati Irrigation Project

Bagmati is one of the main medium-sized rivers in Central Nepal This river is perennial, providing an assured supply of water which i essential for dependable farming. A barrage will be constructed near Man galpur, near the place where the Bagmati river flows into the Tarai plai and passes through the Mahabharat and Chure ranges. The project aim to utilize 34.7 cubic metre water per second on each bank or a total o 69.4 cubic metre per second of water. The total cost of this project is esti mated to be Rs. 15,00,00,000. The project feasibility report has been com pleted. The project will be started in the last year of the Plan and 25 pe cent of the construction work will be completed in the same year.

5. Patharaiya Irrigation Project

The purpose of this project is to provide irrigation water by construc ting a weir in Patharaiya river at a site 72 k.m. north-east of Dhangarhi The canal on the right side will irrigate 2,000 hectares of land. The estima ted cost of the project is Rs.30 00,000. The construction work of this pro ject has been in progress since fiscal year 1969-70 and is expected to be completed in the second year of the Plan.

6. Banganga Irrigation Project

Banganga is one of the main rivers in the Lumbini Zone. Although the river has been utilized for irrigation through the Jagdishpur reservoir for many years, this project will further increase the irrigation facilities in the area. Under this project it is planned to construct a weir at a short dis tance below the confluence of the Banganga and Kailali rivers, which will be linked by a main canal with the Jagdishpur reservoir. The reservoir will be renovated and its storage capacity will be increased. The canal will irrigate about 8,000 hectares of land. The construction cost is estimated to be Rs. 1,40,00,000. Construction will begin in the first year of the Plan and will be completed by the end of the Plan period.

7. Rapti Irrigation Project

Although the Rapti River is one of the important rivers in Banke dis trict, it has yet to be harnessed. Agricultural production will increase con siderably if the Rapti is irrigated by the implementation of this project.

Since there is a possibility of completing the innudation canals with out building the headworks, construction costs of the project will be reduc ed considerably.

The project will irrigate 3,000 hectares of land and the total cost of construction is estimated to be Rs. 40,00,000. The construction work of the project has been underway since 1969-70 and is expected to be completed in the second year the Plan period.

8. Chapakot Tar Irrigation Project

Chapakot Tar is in Syangja District of Gandaki Zone. The project plan shows the construction of a diversion weir at Jyagdi River in Darsing village and a canal system on the left bank by which 80 cusecs of water will be supplied for the irrigation of 2,000 hectares of land. In the absence of irrigation facilities, only maize and millet are grown in limited areas at the present time. Irrigation will make it possible to grow paddy, wheat and sugar-cane in the region. Construction work of the project will be completed in the second year of the Plan.

9. Chaurjahari Tar Irrigation Project

This project is in Rukum district. About 250 hectares of land will be irrigated after the completion of this project. Estimated cost of the project is Rs. 7,00,000. Although projects in remote and inaccessible districts cost much more than in the Terai, they are vital in the development programmes of such districts. In a remote district like Rukum, provision of irrigation facilities, even though in a small amount, would increase food production and help to solve the problem of food deficit.

The survey, design and cost estimate of the project have been already completed. Construction work was started in 1969|70 and will be completed in the second year of the Plan.

10. Renovation and Extension (including Chandra Canal)

Under this programme, the necessary renovation and extension of various irrigation projects already completed will be undertaken. This will ensure the more effective utilization of the irrigation potential of the projects and thereby provide additional benefits. This programme mainly deals with the renovation of the Chandra canal and includes repair of the head works, renovation of structures in the canal, and extension of the canal.

The project report for renovation of the Chandra canal is under preparation. Renovation and extension of Tilawe, Jhajh and Dudhora projects are also included in this programme. Similarly, other canals also will be renovated and extended as required.

11. Flood Control and Reclamation

A major portion of rain in Nepal comes during Monsoon within a short period of time. Due to topographic conditions, rivers flood during the rainy season, change their courses, and cause bank erosion which endangers the adjoining settlements and destroys cereal crops every year. Recognizing the urgent need for protection of land against such damages, this programme has been implemented from the year 1969|70. Under this programme, necessary survey of the damages caused by such rivers in different parts of the country will be conducted and appropriate construction

works will be undertaken. This programme also includes the Likhu river control scheme which is a part of the follow-up works of the Trisuli Watershed Development Project.

12. Project Feasibility Studies

A survey of various rivers scattered around the country, determining their potentiality and feasibility for irrigation, is included in the annual programme every year. The preliminary survey is followed by design and cost estimates of the feasible projects, followed by the preparation of the complete report of the project. The main purpose of this programme is to formulate sound irrigation projects based on the water resources of the country and to provide detailed information on the techno-economic aspects of any project before it is selected for implementation. This will not only provide important data regarding the development of water resources, but will also be helpful in formulating feasible and practical projects. Under this programme various model studies, laboratory tests and other work which is impossible to do in Nepal will be completed by the foreign agencies and advisory services of the foreign experts. Main studies under this programme are as follows:

(a) Sunkosi Terai Project

The principal objective of this project is to prepare a project report based upon feasibility studies on the Sunkosi River for the development of irrigation facilities in the central and eastern sectors of the Terai lying between the Kosi and Bagmati rivers. The preliminary report states that the project is feasible and practical. Therefore, a detailed study is underway with the joint efforts of His Majesty's Government and the United Nations Development Programme / Special Fund. It is assumed that the proposed project can be designed to generate 75,000 Kw. power and to irrigate about 1,00,000 hectares of land.

(b) Babai Irrigation Project

Babai is one of the main rivers in Bheri Zone. According to the preliminary survey, it is estimated that the project can irrigate 9,100 hectares of land in Banke and Bardia districts. During the Plan period, a feasibility study of this project will be completed, and the final report will be prepared.

(c) Kankai Irrigation Project

Kankai is the main river in Mechi Zone. According to the preliminary report, it is estimated that this river can be harnessed to irrigate 40,500 hectares on the west bank and 32,000 hectares on the east. A feasibility study will be completed, and a detailed report will be prepared during the Plan period.

(d) Kanchandanawa Irrigation Project

The project is expected to irrigate 20,000 hectares of land in Kapilvastu and Rupendehi districts in Lumbini Zone. The survey work is in progress, and a detailed report and study will be completed within the Plan period.

13. Gandak East Canal

The Eastern Canal in Nepal which separates from the Don branch canal of the Gandak Project will provide irrigation for 69,600 hectares of land in Bara, Parsa and Rautahat districts. The length of the main canal will be about 80 km, 600 cusecs of water will be provided. Construction work on this project is expected to be completed in the second year of the Plan.

14. Gandak West Canal (Nepal)

A separate head-regulator is constructed in the main dam for this canal (which is different from the main western canal flowing to India). The length of this canal will be 28.8 km. and can irrigate about 24,000 hectares of land in Nawalparasi district. The estimated water supply for land by this canal is 232 cusecs. Construction work on this canal is expected to be completed by the second year of the Plan.

15. Chatra Field Channel

This project is a part of Chatra Irrigation Project now under construction with Indian Aid. According to the agreement, the Indian Government will construct canals above 5 cusecs, while field channels below 5 cusecs will be constructed by His Majesty's Government. The purpose of this project is the construction of such channels only.

The Chatra Project will irrigate 56,500 hectares of land in Morang and Sunsari districts, and its total cost is estimated at Rs. 70,00,000. The total number of channels will be approximately 800, with each ranging from 0.4 km. to 4.8 km. in length. Surveys of most of the channels have been completed. The project is expected to be completed in the second year of the Plan.

Tube-well Irrigation Programme

Ground water resources have to be utilized where ever surface water irrigation is not possible from rivers and streams. At one time, some tube-well projects were carried out by the Government for drinking water in Kathmandu Valley and in some parts of the Terai. Subsequently, 29 tube-wells were installed for irrigation in 1967-68 and 1968-69. It is noteworthy that even in the absence of necessary data from surveys and investigations of ground water resources, the above mentioned tube-wells are functioning satisfactorily. Tube-well projects will be more successful when the results of ground water resources investigations to be conducted by the Department of Hydrology are made available.

Tube-well irrigation projects have some special benefits of their own, and such projects are gaining in popularity. Therefore, it has become necessary from economic and practical stand-points to utilize ground water as well as surface water for irrigation.

According to the programme, 250 tube-wells will be installed in Sagarmatha, Janakpur, Narayani and Lumbini zones. Assuming that one tube-well will irrigate 60 hectares of land on average, approximately 15,000 hectares of land will be brought under tube-well irrigation.

Minor Irrigation Project

Since a detailed survey of all projects to be implemented during the Fourth Plan period has not been completed and no cost estimates for such projects have been made, it is envisaged to implement 182 projects throughout the 14 zones on the basis of toposheets and preliminary surveys. This should add 21,932 hectares of land to be under irrigation. The annual programme of minor irrigation will be determined in coordination with the Resettlement Programme.

It is essential to recognize that a lasting arrangement has to be made for the proper maintenance of completed as well as new projects. Without this arrangement, irrigation projects will not serve their purpose.

Irrigation Projects and their Outlay

Outlay on various irrigation projects to be implemented during the Fourth Plan period is given below:

Project	Outlay (Rs. in '000)
(a) Major Irrigation Project	17,39,00
(b) Tube-well Irrigation Project	3,50,00
(c) Minor Irrigation Project	5,00,00
Total:	25,89,00

TABLE 58

IRRIGATION PROJECTS

Project	Location	Outlay (Rs in '000) Irrigation (in Hectares)			
		Outlay on the Projects: Area to be irrigated			
		Total cost	Outlay during the Plan period	Total area	Area to be irrigated during the Plan period
New Projects					
1. Sharada	Kanchanpur	18,000	18,000	25,000	25,000
2. Lohattar	Chitwan	29,750	29,750	12,000	12,000
3. Bagmati	Rautahat, Sarlahi & Bara	1,50,000	37,500	81,000	—
4. Banganga	Kapilvastu	14,000	14,000	8,000	8,000
5. Tube-well	Sagarmatha, Janakpur, Narayani & Lumbini	35,000	35,000	15,000	15,000
6. Minor Irrigation	14 Zones	50,000	50,000	21,932	21,932
Continuing Projects					
1. Kamala	Dhanusha & Sirha	55,000	33,000	28,000	—
2. Pathraiya	Kailali	3,000	2,000	2,000	2,000
3. Rapti	Banke	4,000	3,000	3,000	3,000
4. Chapakot	Syangja	3,000	2,000	2,000	2,000
5. Chaurjahari	Rukum	700	600	250	250
6. Chatra(Field)	Morang & Sunsari	7,000	6,500	56,500	56,500
7. Gandak (East)	Bara, Parsa & Rautahat	—	—	28,200	28,200
8. Gandak (West)	Nawalparasi	—	—	9,750	9,750
Miscellaneous					
1. Project Feasibility Study		7,550	7,550	—	—
2. River Control & Reclamation		10,000	10,000	—	—
3. Renovation and Extension		10,000	10,000	—	—
	Total:	3,97,000	2,58,900	2,92,632	1,83,632

CHAPTER VIII

SURVEY, LAND REFORM AND LAND ADMINISTRATION

The land reform programme must be effectively carried out in order to create the proper atmosphere of planned development and to establish a society free from exploitation, based upon class co-ordination as envisaged by the Panchayat System. In the present situation, economic development cannot be generated without substantially changing agriculture, and thereby raising the living standard of the tenants. No basic change in agriculture can be attained unless the tenants share equitably in agricultural output. In fact, the objective of creating the necessary conditions for attaining a society free from exploitation may remain unfulfilled unless traditional exploitation based on land is eliminated. Also, it is necessary to transfer inactive capital and under-employed labour from agriculture to industry or some other more productive sector of the economy. It is for these reasons that the current land reform programme will be implemented as a priority programme.

Unless the land reform programme is effectively and properly executed, other agricultural development programmes will not be effective. Therefore, the land reform programme will be emphasized by accelerating the work of survey and land administration.

The revenue survey is imperative in the establishment of some permanency in the land system and in the preparation of a register showing land-owners, tenants, and the kinds of land. This information helps in the distribution of the permanent tenancy right certificates and land above ceiling Considering these facts, the objectives and policies of the Fourth Plan are formulated to keep in view the capacity and the desired changes in the directors of surveys, land reform, and land administration.

Progress of the Third Plan

Revenue survey work in 7,82,992 hectares of land was completed during the first four years of the Plan period, compared to the target of 10,73,418 hectares. Similarly, maintenance survey branches were set up in 16 districts instead of the targeted 22. Simplification in administration and uniformity in land managment are indespensible for the attainment of the objectives of the land reform programme. Land (Administration) Offices in 13 districts were opened during the first four years of the Plan period as part of the programme to set up Lands Department in the centre and Land (Administration) Offices in the districts.

The following Table shows clearly the achievements made in the land reform programme:

TABLE 59

ACHIEVEMENTS OF THE LAND REFORM PROGRAMME

Subjects	Unit	Third Plan Target	Progress upto four years
1. Preparation of land registers	No.	8,89,928	11,63,005
2. Preparation of tenancy registers	"	16,66,338	18,27,605
3. Distribution of temporary tenancy certificates	"	17,89,050	14,46,496
4. Preparation of Loan statement from the moneylenders	"	58,022	1,02,417
5. Preparation of loan statement from the tenants	"	13,55,360	16,24,850
6. Distribution of permanent tenancy certificates	"	2,01,143	23,136
7. Formation of Ward Samities	"	25,000	25,000
8. Collection of savings	Rs	30,13,31,691	9,82,05,956
9. Determination of loan	Rs	8,95,09,000	5,07,45,472
10. Distribution of land in excess of ceiling	Hectare	61,913	16,685

Objectives in the Fourth Plan

The land reform programme, as a means to create a society free from exploitation and to increase agricultural production, will have the following objectives during the Plan period:

a. To effectively implement the Land Reform Programme and provide better incentives to the actual tillers;

b. To adequately provide agricultural credit, research, extension works and publicity, and other material and immaterial inputs, as well as to bring about a better co-ordination between land reform and other related programmes; and

c. To promote proper institutional organs to meet the above requirements of the farmers.

Past experiences in land reform have shown that the effective implementation of the programme requires administrative efficiency and better co-ordination. It is true that if the Land Reform Department fails to properly assess and evaluate the load and nature of the work and to allocate accordingly the available manpower and resources, the programme will suffer set-backs. Also, men and materials will not be utilised to the point of maximum benefit. The fixing of rents and the distribution of permanent tenancy certificates have not been done satisfactorily so far. There have also

been some problems with respect to compulsory savings collections and utilization. Revenue survey operations were not accelerated, and as a result, the distribution of permanent tenancy certificates and the appropriation and redistribution of land above prescribed ceilings have been delayed. Difficulties have also been experienced in the debt-determination and debt-redemption programmes. Because of the lack of proper coordination between the Land Reform and Agricultural Extension Programmes, there does not seem to have been any increase in agricultural productivity.

Policies of the Fourth Plan

Considering the above mentioned objectives of the programme, the difficulties encountered in the past, and the working capacity of the departments, the following targets have been fixed for the Fourth Plan:

1. Revenue surveys will be completed in 44 districts (including the 18 districts already completed), and work will be started in 4 more districts. Trigonometrical and Topographical surveys will also be started in a few selected districts.
2. The distribution of Permanent Tenancy Certificates will be completed in 39 districts.
3. Land appropriation and redistribution programmes will be effectively implemented under ceiling provisions of the Lands Act in this 39 districts.
4. Land (Administration) Offices will be established in these 39 districts, and the existing Land Reform Offices will be amalgamated into the new Land Offices.
5. Proper and permanent arrangements will be with respect to compulsory savings and their effective utilization. General auditing of the amount collected so far will also be completed.
6. Rents will be fixed not to exceed 50 per cent of the main crop (or some other conducive figure) in 39 districts during the Plan period. This is being done as an incentive to farmers to grow more.
7. The determination and realisation of agricultural credit will be accomplished in all Land Reform Districts.
8. Reforms will be made in the land tax system in order to impart greater social justice and to provide an incentive for increased production.
9. To give effect to the land to the tiller programme and also to help to mobilize men and capital from the agricultural to non-agricultural sector, the existing financial institutions will be made more effective in advancing loans to farmers, provided that the farmers are going to become owner-tillers and the original proprietors are investing their money (that they got from land sold)in particular industrial projects. Such institutional credit will be provided only on the condition that real tenants will be the owner-tillers and that the land for sale will be used as security against loans advanced to the tillers whose liability to the lending corporation will be redeemed as they repay the loan in prescribed instalments.

1. Survey Programme

a. Cadastral Survey

Revenue surveys help to levy a uniform land tax. They also pave the way for the appropriation and redistribution of land above the allowed ceiling to the landless tenants and the distribution of permanent tenancy certificates.

New equipment, such as orthophoto, telescopic alidade, stadia rod, etc., will be introduced to make the revenue surveys less expensive and faster during the Plan period. The staff of the survey party teams will be trained to use this new equipment.

Revenue surveys will be completed in an additional 26 districts or approximately 3,37,955 hectares of land, and will be started in 4 more districts during the Plan period. A detailed programme is shown below:

TABLE 60

DISTRICTS WHERE REVENUE SURVEY WILL BE COMPLETED

F.Y. 1970-71	F.Y. 1971-72	F.Y. 1972-73	F.Y. 1973-74	F.Y. 1974-75
Kapilvastu, Rupendehi, Morang & Saptari	Dang, Makwan-Pur, palpa & Ilam	Arghakhachi, Panchthar, Tehrathum, & Surkhet	Dhankuta, Dailekh, Pyuthan, Jajarkot, Achham, Sallyan, Gulmi, Syangja & Sindhuli	Ramechhap, Rolpa, Rukum, Tanahu & Dadeldhura

b. Trigonometrical Survey

The trigonometrical survey team will establish three trigonometrical points in the areas where revenue surveys have been completed. The trigonometrical points established by the Survey of India will be systematised. Each "Amin" of the revenue survey party will have three trigonometrical points. In the beginning period, arrangements will be made for the requisite number of trigonometrical points for 7 survey team parties.

The scale of the map will be uniform for all areas where the survey work has been completed. There will be no overlapping of one area above the other when there are common borders.

It is estimated that the trigonometrical survey work will be completed for approximately 2,72,685 hectares of land during the Plan period.

c. Maintenance Survey

The maintenance survey programme is important for the elimination of duplication in the completed revenue survey and for the updating of

survey maps. One maintenance survey section will be established in ea Land (Administration) Office in order to keep registers up-to-date and trace and properly care for survey maps. New records will be entered case borders are changed due to the purchase and sale of land or so other reason. The duplicates of such maps will be sold and distribute Inspection work will be done for the maintenance of the trigonometri points once they are fixed, and reports will have to be submitted wh changes take place.

The plan envisages to establish maintenance survey sections in additional 26 districts.

d. Topographical Survey

Topographical maps are required for the geological, soil and for surveys. We have to depend on others for these maps, even though t available copies are inadequate. Besides, these maps are not according our needs and the available copies are out-of-date.

His Majesty's Government of Nepal will endeavour to obtain Uni Nations Special Fund approval for setting up a topographical survey s tion during the Plan period. It will be entrusted with the following task

1. To complete the topographical survey works of the areas, oth than those undertaken by the Geological Survey of India, and t publication of one inch map sheets.
2. To reproduce one inch map sheets of Nepal in the required quant now being published by the Survey of India and to keep the she up-to-date.
3. To draw and publish up-to-date small maps of Nepal, e.g. 250,000.
4. To survey and publish large-scale topographical plans of the tow
5. To survey and produce plans of sites for development projects.
6. To print, and possibly draw, maps of surveys by other departme (e.g. Geological Survey, Soil Survey, Forest Resources Survey).

The training of staff (Junior and Operating) and construction of building will be completed during the first three years of the Plan peri

Drawing and reproduction of map sheets will begin in 1974-75 a continue from that date.

e. Training

The importance of trained personnel can be hardly exaggerated there is to be a fast and efficient completion of the different survey p grammes. The Survey Training Centre is continuing its training program for the staffs of the survey parties, as well as sending survey personnel foreign countries for training. The programme of the Survey Training C tre will be expanded for training in different subjects in order to cope w the expanded activities in the revenue, trigonometrical, maintenance, a topographical surveys.

2. Land Reform Programme

(a) Compulsory Savings Scheme:

In order to increase agriculture production, an institutional credit system is deemed to be a major pre-requisite. The main and foremost objective of this programme is to accelerate the growth of the agricultural sector by transfering the inactive capital remaining in the agriculture sector to the non-agricultural sector. In addition to this, protection of tenancy rights and an end to unnecessary economic pressures on the peasants should be attempted. During the Fourth Plan period, it has been estimated that the collection of compulsory savings will amount to Rs. 60 million.

(b) Auditing and Proper Management of Savings:

The objectives of land reform cannot be achieved only by collecting savings. It is very necessary to utilize the savings in an effective manner. To overcome the misappropriation of savings, it is very urgent to audit all the account records and to keep the records intact and in order. During this Plan period, the target for regular auditing of savings has been fixed at 17,019 wards.

(c) Protection and Proper Management of Tenancy Rights:

It is very necessary to protect and secure tenancy rights, in order to increase production by providing incentive to the real tenant who is supposed to till the land. The number of temporary and permanent tenancy certificates issued up-to-date are 14,46,496 and 23,136 respectively. Unless the accurate boundaries of the land have been determined, tenancy rights certificate cannot be issued. Until the revenue survey is completed, the tenants are protected by issuing temporary certificates covering the lands they are tilling at present. Legal provisions have been made in the Act for the protection of such tillers from eviction. During the Fourth Plan period, permanent tenancy certificates will be issued after due enquiry and investigation on the basis of the temporary certificates. These will be issued in panchayats of the districts where the revenue survey has been completed. In addition to this, a programme for securing written agreements between land-owners and tenants will be launched. This will minimize litigation between the land owner and tenants, thereby restoring mutual cooperation between them.

(d) Fixation of Rent:

It is deemed compulsory to fix the amount of rent in order to provide a just share of output to the tenant who works so hard, and thereby increase total production. This sort of fixation of rent has been concentrated in the Kathmandu Valley at present. The tenant outside the Valley has no incentive to increase production by hard labour since the rent is not fixed. Therefore, during the Fourth Plan period, the rent will be fixed in those 26 districts where the revenue survey is presumed to be completed.

(e) Acquisition and Distribution of Land:

To minimise the great disparity in the distribution of land, to increase agricultural production and to create an atmosphere in which investment

of inactive capital may be chanelled from the agriculture sector to the non-agricultural sector, the provision of land ceilings has been made. Those lands which are above the ceiling will be distributed to the tenants and landless peasants in order of priority. It has been difficult to distribute the excess land because the revenue surveys have not been completed and the accurate boundaries of land above the ceiling could not be determined. For this reason, the programme of land sale and distribution will be carried out in only those 39 districts where the Revenue Survey will be completed.

(f) Determination of Loans:

To free the peasants from the clutches of the money lenders and other unnecessary exploitation by traditional credit systems, a programme to determine the actual amount of agricultural credit is still in operation. During the Fourth Plan period, the target has been fixed for the determination of agricultural credit to the approximate amount of Rs. 40 million, out of which the remaining amount not completed during the last plan period will be calculated.

3. Land Administration

Targets have been fixed to set up Land Offices (now called Land Administrative Offices) in those 26 districts where the revenue survey operation will be completed during the Fourth Plan period. Particulars are given below:

TABLE 61

DISTRICTS WHERE LAND (ADMINISTRATIVE) OFFICES WILL BE SET UP

1970/71	1971/72	1972/73	1973/74	1974/75
1. Morang	1. Kapilvastu	1. Makwanpur	1. Surkhet	1. Dhankuta
2. Sunsari	2. Rupendehi	2. Palpa	2. Dang	2. Dailekh
3. Mohottari	3. Saptari	3. Ilam	3. Arghakhachi	3. Jajarkot
4. Siraha			4. Panchthar	4. Achhami
5. Dhanusha			5. Terathum	5. Pyuthan
6. Chitwan				6. Sindhuli
				7. Sallyan
				8. Gulmi
				9. Syangja

In general, the main functions of these Land Offices will be as follows:

1. To compile and keep land-owner and tenant records up-to-date and to prepare sound statistical data for future land reform programmes;

2. To protect and guarantee the rights and interests of the proprietors and the tenants in their respective lands; and

3. To distribute lot-wise certificates to the proprietors and tenants and to introduce simple and prompt types of land dealings e.g., Registration of Title for the convenience of the people and for mitigating land litigation cases.

APPENDIX

SURVEY, LAND REFORMS & LAND ADMINISTRATION

List of programmes	Present postition	Target	Expenditure (Rs in'000)
(a) Survey			4,92,00
1. Cadastral Survey	Already started	Additional 26 districts or 3,37,955 hectares approx.	2,90,50
2. Trigonometrical Survey	Proposed	2,72,685 hectares approx.	50,75
3. Maintenance Survey	Already started	Additional 26 districts	—
4. Topographical Survey	"	Basic works such as construction of building, training and installation of the equipment will be completed by the third year and reproduction of maps will start on and from the fourth year of the Plan period.	1,11,50
5. Survey Training Centre	"	a. Amins —570 b. J. Surveyors — 95 c. S. Surveyors — 20	39,25
(b) Land Reform			4,09,00
1. Auditing and Proper Management of Compulsory Savings	Already started		1,93,15
(a) Savings deposited in the Savings Corporation (in Rs)		2,77,26,342	
(b) Regular auditing of savings	(in Ward numbers)	17,019	
(c) Proper keeping of new a/cs	(in Ward numbers)	17,019	
(d) Gram Samities formed	(in Gram Panchayat)	1,151	
2. Protection and Preservation of Tenancy Rights	Already started		61,35
(a) Distribution of permanent tenancy certificate (in District)		26 (more)	
(b) Sale and distribution of tenancy rights in excess of the prescribed ceiling (in Hec.)		17,386	
(c) Keeping up-to-date records of the tenants (in District)		26 (more)	

3. Fixation of Rent	Already started		11,35
(a) Fixation of rent according to the Act (in District)		26 (more)	
4. Compulsory Savings Scheme	Already started		40,50
(a) Collection of savings (in Rs.)		6,40,85,400	
(b) Construction of godowns (Nos.)		300	
(c) Deposit in Savings Corp. (in Rs.)		2,77,26,342	
(d) Distribution of the interest of savings (in Ward numbers)		34,890	
(e) Distribution of pass books (in Ward Nos.)		17,188	
5. Acquisition and Distribution of Land	Already started		40,90
(a) Maintenance of Land owuership register (in District)		26 (more)	
(b) Acquisition of land in excess of ceilings (in Hectares)		23,530	
(c) Confiscation of lands according to the Act (in Hectares)			
(d) Distribution of land in excess of ceilings (in Hectares)		23,530	
6. Determination of Loans	Alrerdy started		61,35
(a) Determination of agriclture loan (in Rs.)		According to the petitions filed in the office	
(c) Land Administration*			
1. Establishment of Land (Administrative) Offices. (No. of additional districts)	Already started	26	
2. Setting survey complaints and recorrection of land records. (No. of additional districts)	"	30	
3. Preparing Land Registers. (No. of additiontional districts)	"	26	
TOTAL			9,01,00

* All expenditures will be met from Regular Budget.

CHAPTER IX

FOREST AND MEDICINAL PLANTS DEPARTMENT

Progress of the Third Plan

It was envisaged in the Third Plan to complete the survey of forest resources and to prescribe and implement the working plan in those areas where surveys had been completed. A working plan has been prescribed and implemented in T.C.N. area. Likewise, the working plans for Birgunj, Biratnagar and Kanchanpur Division have been implemented by establishing 'Pradhan Van Karyalaya'. It is planned to implement working plan in Chitwan, Banke and Bardia Divisions in the fiscal year 1969|70.

Regarding the survey of forest resources, the statistical report of Terai Region has been published, and the compilation of data for the middle zone in the Hills has also been completed.

Regarding soil surveys, the report on soil types and land use of Chitwan and Birgunj Divisions has been published and the report of Janakpur Division has also been prepared. The survey on soil type and land use in Banke and Bardia Divisions has been completed.

Out of a target of 2,000 km. envisaged in the Third Plan, 1,493 km. of forest boundry have been demarcated in the first four years of the plan. Similarly, out of a target of 713 km. of forest roads to be built, 547 km. have been completed and 237 km. of fire-line have been completed out of a target of 360 km. Afforestation has been done on 4,150 hectares of land.

Against the target of training 70 Foresters and 35 Rangers annually at the Nepal Forestry Institute, 61 Rangers and 96 Foresters have been trained.

Under United Nations assistance, the preliminary survey work in Trisuli Watershed Development Project has been completed, and the demonstration and development works have also been started and partially completed.

The gradation, pharmacognostic study, screening and analysis of 150 kinds of herbs and drugs were carried out in the Royal Drug Research Laboratory under the Department of Medicinal Plants. In addition, 50 herbs obtained from private parties were analysed and investigated. More than 500 other analytical studies were also carried out.

Also, studies were done for the formulation, standardisation, and quality control of thrity-two newly manufactured types of medicine. These medicines were manufactured and sold all over the kingdom. In total 200,000

antibiotic capsules, 8.7 million tablets of various types of sulpha drugs and vitamin C, 1.9 million bottles of syrup and 25,000 bottles of liquid drugs were also manufactured.

More than 10,000 indigenous and exotic plants of academic interest and aesthetic value were introduced in the Godawari Royal Botanical Garden for recreational purposes. The garden has been renovated.

The Preliminary Botanical Survey has been completed throughout the country, and more than 25 thousands Herbarium sheets have been prepared and preserved. In the context of the plant survey, five books on Nepalese flora have been prepared and published. Publications dealing with the flora of Nagarjung, Lamtang, Jumla and areas of Central Nepal are in press.

Mentha and Rauwolfia have been raised in experimental basis on four bighas of land at Tarhara in Biratnagar. They have also been raised on 30 bighas of land in Brindaban Harbal Farm (Hetauda). Pyrethrum, Belladonna, apple and plums have been raised on 200 ropanies of land in Daman. The annual production consists of 2000 kg. of Pyrethrum and 200 kg. of belladonna. In Tistung, Saffron, Pyrethrum and Belladonna have been planted on 200 ropanies of land. The annual yield has been 1000 kg. of Pyrethrum and 200 kg. of Belladonna. There is a Belladonna farm of 300 ropanies in Manichur. There is also a farm of 300 ropanies in Shivapuri having Pyrethrum, Belladonna and Digitalis with an annual yield of 1000 kg. of Pyrethrum 100 kg. of Belladonna and 6000 kg. of Digitalis.

On the basis of up-to-date experiences, the difficulties encountered ineffectively carring out the forest development programme have been as follows:

a. The forest is being damaged gradually by the hapazard and increasing settlement of illegal encroachers.
b. In the absence of a sound national forest policy, there is no coordination between Land Survey, Revenue, Forest and Resettlement Departments. This has resulted in each department emphasizing its own departmental interest rather than the national interest.
c. The protection of forest is being adversely affected due to such excessive privileges as Harghar Sangha, (a tradition under which the Government issues permits to the public for cutting certain trees for domestic purpose, although this is often abused) uncontrolled entry to contractors and the public inside the forest, and the auction of the trees inside the deep forest.
d. Because of a lack of repairs and supervision, and changing circumstances, forest demarcation has not been effective. Also, forest road and firelines are not being properly utilized.
e. Because forest services are not available in many forests of hilly regions, the programme cannot be considered to be country-wide. The main reason for this is because trained technical personnel are not available.

Objectives and Policies of the Fourth Plan

Since forestry has an important role in increasing national revenue and fulfilling the demand of the common people, as well as in soil conservation and wild life preservation, the Fourth Plan aims, through scientific management, to conserve and develop the forest resources in order to get the maximum benefits.

Likewise, investigations and uses of herbs and vegetation by scientific means and by increasing production of herbs by processing and manufacturing of the drugs, the Fourth Plan aims at developing the herbs and medicinal plants.

In addition, it has the objective of improving the national economy by exporting surplus medicines and processed herbs of international standards. Therefore, the main policy is a scientific management of the forest by prescribing working plans on the basis of a nation-wide forest survey. All the forest development works are to be based only on those plans. Forest roads, fire-lines, and other construction works will be limited to those areas where working plans are being implemented. Thus, to implement the development work as prescribed in the working plans, there should be strict judicial arrangements and good administrative management supporting the forest demarcation once it is fixed. It has been proven historically that the forest will gradually deteriorate instead of develop if the concerned forest offices do not prohibit free entry into the forest and do not control the use and exploitation of the forest according to the working plan prescription.

As there is a severe soil erosion problem in the hills, the policy of soil conservation and afforestation will be continued, as well as the overall development of forest resources in the Fourth Plan period. To develop the forest based industries more attention will be given to the survey and investigation of raw materials in order to increase production.

Programmes of the Fourth Plan

1. Complete coverage of aerial photos for the hilly region.
2. Prescription and implementation of working plans for the four remaining divisions of Terai: Janakpur, Hanumannagar, Jhapa, Kapilvastu and the prescription of working plans for two divisions in the hills: Mahakali, and Kathmandu.
3. Revision of working plans for three Divisions in Terai: Chaitwan, Banke and Bardia.
4. Soil and land-use survey of Banke, Bardia Hanumannagar, Kathmandu, Jhapa, Lumbini, Kapilvastu divisions and one hill division.
5. Starting of soil conservation work in the Kathmandu water-shed. Completion of soil conservation work in Panchkhal and developing it into a recreation centre.
6. Silvicultural studies, collection of hydrological and Meteorological data, collection of timber and botanical specimens and standardisation of grading and scaling rules for timber.
7. 4,000 km of forest demarcation and the maintenance of old forest demarcation.
8. 8,000 Hec. of afforestation in Hills and Terai and the supervision and maintenance of old plantation areas. Under this programme, 2,000 hectares of forest will be protected and conserved, and 2,000 hectares of land in Likhu Valley will be afforested as a follow-up programme of the Trisuli Watershed Development Project.

9. Economical Mill Units will be established on the basis of extensive investigation of the utilization, marketing, demand, and producing capacity of the forest. In this connection, there is a programme to establish a Forest Products Development Centre at Hetauda.
10. The programme of annually training 25 Rangers 70 Foresters will be continued. A three months' inservice training course will be given to refresh forest technicians.
11. Forest conservation, development and improvement works will be continued at Jiri in Dolkha District.

Medicinal Plants

A. Royal Drug Research Laboratory

1. Manufacturing of medicines from the extraction of herbs and plants.
2. Extension of Pharmacological Laboratory and Pharmacological screening of herbs.
3. Quality control of herbs and drugs, oil and fats, condimonts and spices, beverages and drinks.
4. The work of compiling a Nepal Pharmacopaeia of an international standard will be started by collecting standard specifications and methods of analyzing herbs and drugs, etc.
5. Technical assistance will be provided to formulate the Nepal Drug Act and to enforce the Act throughout the Kingdom.
6. Emphasis will be made during the Plan period for the detailed investigation of plants and herbs yielding Alkaloides, Glycocides, Saponin and to manufacture medicines out of them.

B. Production Unit

1. 100 to 150 kinds of new medicines will be manufactured.
2. Processing and distillation of the herbs will be carried out.
3. The extraction of main elements from the herbs and their utilization in the manufacture of new medicine will be continued.

C. Royal Botanical Garden

1. An alpine garden consisting alpine flora will be established in an appropriate place near the Phulchoki Mountain.
2. One Physic garden will be established.
3. The Arboretium and Pinetium will be extended.

D. Herbal Farm

Beneficial exotic and indigenous new herbs will be cultivated on an experimental basis in appropriate places. If the cultivation proves successful, it will be extended for the time being, Rauwolfia, Mentha, Belladonna and Lemon grass are worth mentioning.

E. Botanical Survey and Herbarium

1. A well equipped, air-conditioned and fire-proof Herbarium will be constructed.
2. Cytotaxonomic, Ecological, Physiological and Mycological Laboratories will be established.
3. Intensive country-wide survey and collection of plant specimens, seeds and living plants throughout the country will be carried out. For this purpose, regional Botanical Survey Offices in East, West and Central Zones of Nepal will be established.
4. Detailed accounts of the Flora of Nepal will be complied within the Plan period.

Programme and Expenditure

The detailed description of the programmes to be undertaken during the Plan period is given in the Appendix.

To operate the planned programmes under concerned departments, the allocation of the funds is as follows:

Project	Outlay (Rs. in '000
Forest	6,11,00
Medicinal Plans	1,97,00
Total Rs.	8,08,00

APPENDIX

Name of the Project	Condition	Physical Target	Layout (Rs in ,000)
A. Forest			6,11,00
1. Forest Inventory Management Country-wide (Preparation of the working plan)	Continuing	Complete coverage of the aerial photos for the hilly region. Prescriptions and implementation of working plans for Janakpur, Hanumannagar, Jhapa, Kapilvastu, Mahakali and and Kathmandu Divisions. Revision of working plans for Chitwan, Banke and Bardia Divisions. Special investigation of industrial or valuable timbers such as walnut and shuttle wood. Soil and land-use survey of Banke, Bardia, Hanumannagar, Kathmandu, Jhapa, Lumbini, Kapalvastu and of one hill	1,35,00

		Division will be completed. Soil conservation in Kathmandu water shed will be executed. Silvicultural research and colletion of wood samples and medicinal plant samples and that of Meterological and Hydrological data. Timber grading and scaling rules will be standardised. An office building will be constructed.	
2. Implementation of the Working plans	Continuing	Implementation of the working plans	1,97,00
3. Afforestation	Continuing	4,000 hectares of land in Hills and 4,000 hectares in Terai will be afforested. The reforested areas will be maintained and protected.	60,00
4. Forest Training Hetauda	Continuing	Every year training will be provided to 25 Rangers and 70 Foresters (duration of Ranger course is two years). The Forest Officers will be trained for three months after entering the service.	14.44
5. Implementation of the working plan in the Nagarjung Royal Forest	Proposed	29 km. will be fenced by barbed wire, 20 Forest Guard Posts will be constructed, 40 km. of Forest Road will be constructed and an 8 hactare area will be reforested.	5.71
6. Forest Boundary demarcation	Continuing	4,000 km will be demarcated and maintenance work on the 4,000 km. of old demarcation line will be continued.	18,00

7. Building Construction	Continuing	Maintenance work on old buildings will be done and new ones will be constructed.	25,00	
8. Forest Development Project	Proposed	An economic mill unit will be established on the basis of an extensive study of utilization, market, demand and capacity of the forest.	1,51,08	
9. Jiri Multipurpose Project, Jiri, Dolkha	Continuing	Silvicultural operation will be conducted in natural forest. After establishing nursery, afforestation will be done. The local people will be educated about the importance of the forest.	4,77	
B. Medicinal Plants				1,97,00
1. Royal Drug Rasearch Laboratory, Thapathali	Continuing	Medicines will be manufactured from the extraction of herbs and shrubs. Standardisation and processing of edible fat and oil will be done. Pharmacological screening of the herbs will be done. Pharmacological laboratory will be extended. Herbs will be exported after processing: A pharmacopoiea will be compiled. Quality control of herbs and drugs, oil and fats, condiments and drinks will be started. A drug Act shall be enacted and enforced throughout the country. After thorough investigation and detailed study of alcolo ide, glycocide and saponine producing plants they will be included in medicine manufacturing.	24,00	

2. Production Unit Thapathali	Continuing	100 to 150 kinds of new medicines will be manufactured. Distillation and processing of the herbs will be carried out. The extraction of main elements from the herbs and their utilization in the manufacturing of new medicines will be continued.	94,00
3.Royal Botanical Gardens Godawari	Continuing	An alpine garden consisting of alpine flora will be established in an appropriate place near Phulchowki mountain. One Physic Garden also will be established. The arboretium and Pinetium will be extended.	17,00
4. Botanical Survey and Harbarium country-wide	Continuing	The Flora of Nepal will be prepared on the basis of a country-wide intensive Botanical Survey and study of vegetation and distribution of plants with respect to cytotaxonomy and phylogeny. A modern Harbarium building will also be constructed. Cytotaxonomic, Ecological, Physiological and Mycological Laboratories will be constructed.	17,00
5. Herbal Farm Country-wide	Continuing	Beneficial exotic and indigenous new herbs will be cultivated on an experimental basis in appropriate places. If the cultivation is successful it will be extended. The	23,00

	main items are Rauwolfia Mentha, Belladonna, Lemon grasses. Saffron cultivation will be extended.	
A. Opium Cultivation Narayani Zone	Opium and Belladonna will be cultivated on commercial scale. Opium will be cultivated in 200 Bighas in Bara, Parsa District in Narayani Zone.	15,00
B. Bellodonna Cultivation	Bellodonna will be cultivated at Mulabari in Langtang.	7,00

CHAPTER X

TRANSPORT

1. Introduction:

1. (1) In the process of economic growth, the overall development programme of a landlocked country like ours can progress only with well-organised and expanded transport facilities. The more inaccessible an area, the more difficult it becomes to transport men and materials. The infusion of development ideas in these regions depends largely on the availability of adequate transportation. It is only through transport expansion that that development projects of all types can flourish together through mutual co-ordination and integration. The rugged topography of the country has posed a formidable problem to all sorts of transport, and because of this, even in the highly emphasized agricultural sector, production targets have not been reached. Thus it is evident from our experience (as well other countries), that unless transportation is sufficiently developed; development programmes cannot be effectively implemented. Consequently, transportation has been given top priority. Furthermore, its development is necessary to bring about efficiency and coordination in adminisration, to overcome regional disparity, and to mobilise scattered and surpuls labour from agriculture to other sectors.

1 (2) With the availability of cheap, speedy and far reaching transport facilities, isolated rural subsistence economies can now find markets and, therefore, form larger and more efficient producing units and replace barter with a cash economy. Industry can be encouraged by the greater accessibility of new resources. Communities or regions so connected and integrated become more productive and more or less self sufficient, causing inter-regional trade to grow on the basis of specialisation and comparative advantage. Thus, transport development, though by no means a guarantee of economic growth, does make direct and indirect contributions to national income through a more productive utilization of time and an expansion of almost all sectors of the economy. In short, transport development contributes to economic development in the following ways:

(a) Enlarging the market and thereby further stimulating economic specialisation;

(b) Helping exploitation of additional resources by making them accessible and thereby enlarging employment and rehabilitation;

(c) Leading to the establishment and for expansion of related industries by making them accessible to raw materials and

(d) Enhancing the optimum utilisation of resources and making the means of production more dynamic.

1. (3) Communication has its own importance, and to a larger extent, it acts as a complement to transport. Only through the expansion of communication channels, can we utilise the transport facility at its maximum capability. The need for all types of communication grows rapidly in every sector of the economy during the process of development. In fact, organized communications channels are the only way to satisfy the increasing needs. Modern life can not be imagined without a developed and modernised communication system. In spite of the importance of transport and communication, to this day historical and geographical factors divide the country into several parts; people are isolated in their villages during the rainy season because of landslides and flood.

2. Objectives:

No important development programme can succeed without the proper organization of transport and communication. Their development in the Fourth Plan will be based upon the following objectives:

(a) To help strengthen, promote and protect the constitutional system, nation and nationality, together with territorial integrity.

(b) To create the essential pre-conditions of transport and communication in order to implement the economic, social, and other related development programmes.

(c) To open up the remote areas which have remained in isolation for centuries by providing transport and communication facilities.

(d) To speed up the pace of progress with a view to imparting an element of dynamism into society and thereby enhancing efficiency in the public and private sectors.

3. Policy:

Transport will get a higher priority during the Fourth Plan period than communication. Surface roads, waterways, airways, ropeway and railways comprise the different modes of transportation, although it is not possible to consider them as equally important. Therefore, the type of transport which is most speedy and stable and yields the quickest returns will be emphasized.

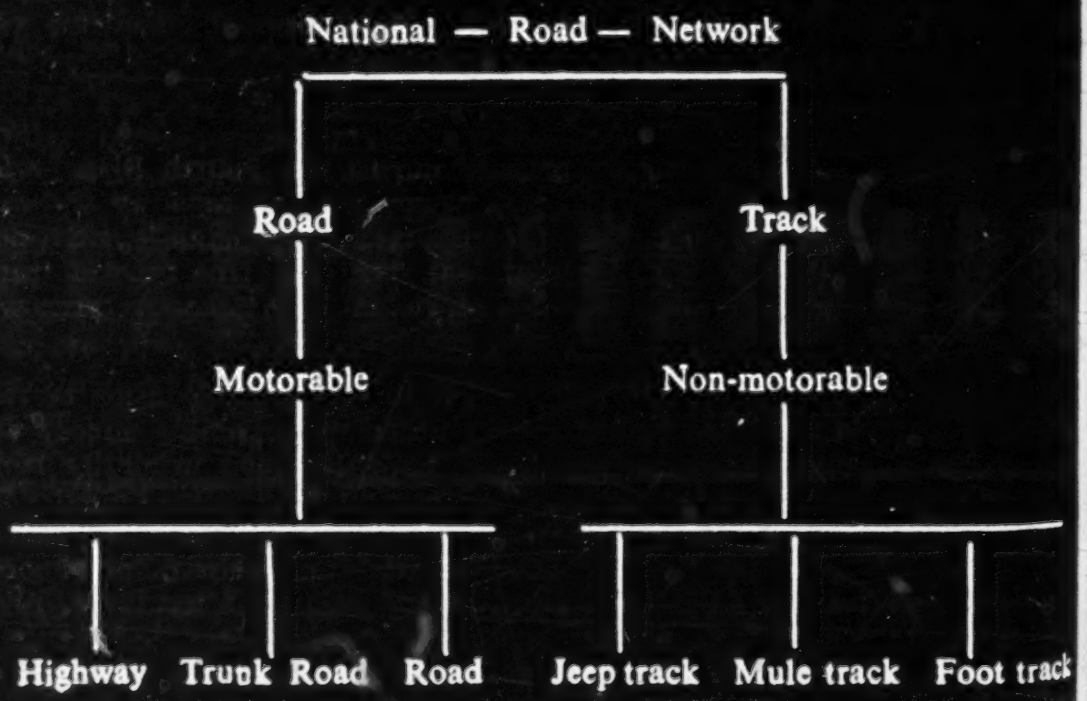
The rugged terrain of the country has limited the expansion of railways, and within this Plan period, only a necessary feasibility survey will be undertaken. Air transportation, though expensive and primarily beneficial to only a section of the well-to-do-class, will neverthless be extended as a temporary measure to all those economically feasible areas, as well as to those places necessary from an administrative or tourist point of view. Therefore, air transport has been given second priority after roads. River navigation, as a solution to our transport problem, is unfeasible because of the rugged topography. Ropeway extension in the hills looks attractive on

theoretical ground, but not from a cost-benefit point of view. Since roads are the most dependable means of transport, the emphasis in the near future will be given to the construction of roads.

In the field of communication, telecommunication and postal services will be given due consideration. So far, postal service is the only means which is serving the majority of the population. Its need is contineously increasing because of the increase in transport extension and educational facilities. Efforts will be made to make available cheaper and speedy services throughout the country by the improvement and expansion of postal services. Moreover, various types of telecommunication services will be established, considering the growing international relations together with the development of industry, trade and tourism.

4. Introduction to Road Development:

The National Planning Commission has based the road development programme of the Fourth Plan on the "20 year Highway Plan in Nepal". Keeping in mind the unique topography and the limited resources in hand, all the districts and zonal headquarters will be linked by motorable road in accordance with the long-term Plan. Since road building is a time consuming process, it would be unreasonable to tie our hands without proceeding with some transport development work in those districts where road construction is supposed to continue in future. Attenion will therefore be devoted not only to the construction of existing roads, but also to the improvement of primitive tracks and the construction of new ones. In this context, efforts will be made to prepare maps with the cost estimates of various roads in the country. In order to provide swift and efficient administration, the entire road network has been classified in the following manner:



In view of the need for a stable and strong organization for the proper development and maintenance of roads, three categories of roads have been devised so that minimum requirements for construction and maintenance are fulfilled. This has been done because further classification is considered unnecessary at present.

1. Highway:

Roads, which are considered to be strategic from a national view point are included in this category. All highways should have the recommended width, sub-base and load bearing capacity. His Majesty's Government (HMG) will assume the responsibility for construction and maintenance.

2. Main road:

Roads, which are less important and shorter than the highway, but like several districts and zones are included in this category. HMG will decide the minimum standards, both physical and technical, for these roads. The task of repairing and maintenance will rest with the local authorities or HMG.

3. Feeder road:

Roads, which are generally short in distance when compared with the main road and connect only one or two districts and which are only important locally are included in this category. The road surface will be black topped, gravelled, or unmetalled according to the region. HMG will take the appropriate steps for the maintenance of such roads, including the complete inventory of road lists. The local authorities will also share some responsibility in this matter.

Even a concentrated road building effort will not complete the project in a short period due to complete neglect for a century. Keeping in view the ideal goal of planning to serve all the people, appropriate steps will be taken to develop and facilitate the transport system in the remote areas where motorable road construction has not yet been feasible. Henceforth it has been necessary to classify those transport facilities which provide for the movement of mules and people a 'foot and bridle path'. Most of the transport facilities available in the country are in this condition. In the Terai, there are similar narrow tracks called "Pagdandi". The sole responsibility and maintenance of such tracks will lie with the Panchayats themeselves. For the present, necessary maintenance and imporvement will be undertaken in most remote areas as required and the standard of mule-tracks will also be improved.

4. Mule track:

The tracks which offer two way traffic for mules are included in this category. These mule tracks can be quite wide at places, but the absence of bridges and culverts, together with the steep ups and downs, restrict the operation of vehicular traffic.

5. Jeep track

The tracks where the movement of carts and jeeps is possible are included in this category. Such tracks will help to link village and farms on the one hand and villages and markets on the other-especially in the Terai region. Such tracks are quite important at present and will continue to be so in the future. It can be hoped that the economic prosperity of the region will automically lead to further development of such fair-weather feeder roads.

6. Road construction Progress up to Date:

In 1951, the total length of roads existing in the country was only 376 kilometres, including 5 Km. of pitched and 83 Km. of gravelled roads. Prior to the First Five Year Plan, the total length of roads in the kingdom of Nepal was 624 Km., including 259 Km. of all-weather and 365 Km. fair-weather roads.

TABLE 62

POSITION OF ROADS IN THE KINGDOM OF NEPAL BEFORE THE FIRST PLAN (1956/61)

(Length in Kilometers)

Roads	Allweather	Fairweather	Total
1. Nepalgunj Area Road	6	—	6
2. Bhimphedi-Amlekhgunj Road	42	—	42
3. Tribhuban Rajpath	126	—	126
4. Birgunj-Raxaul Road	5	—	5
5. Jogbani-Dharan Road	—	48	48
6. Kathmandu Inner Road	80	—	80
7. Kathmandu Valley Road	—	80	80
8. Bhairahwa-Lumbini	—	21	21
9. Taulihawa-Lumbini	—	19	19
10. Bhairahwa-Tribenighat	—	80	80
11. Hetauda-Narayanghat Road	—	80	80
12. Birgunj-Kaliaya Road	—	16	16
13. Janakpur-Jaleshwor Road	—	21	21
Total:	259	365	624

In the First Plan (1956/57-60/61), the target set for road construction was 1,440 Km. which included 480 Km. all-weather and 960 Km. fair-weather roads. Progress achieved during this period was 912 Kilometres of roads, including 170 Km. black top, 173 Km. gravel and 569 Km. fair-weather. In 1961-62, another 178 Km. of roads were added, of which 77 Km. were all-weather and 101 Km. were fair-weather. The First Five Year Plan's achievements in road construction are given in the following table.

TABLE 63

PROGRESS ACHIEVED IN FIRST PLAN (1956/57—1960/61)

(Length in Kilometres)

Road Projects	Pitch	Gravel	Fairweather	Total
1. Kathmandu-Arniko Highway	—	—	19	19
2. Hetauda-Narayangadh	—	80	—	80
3. Kathmandu Valley	64	—	—	64
4. Jogbani-Dharan	53	—	—	53
5. Kuncha-Pokhara	—	—	31	31
6. Kanti Highway	—	—	96	96
7. Patan-Godawari	—	—	19	19
8. Tribhuban Highway	48	35	—	83
9. Lumbini Road	—	—	21	21
10. Bhaisen-Raxaul	5	37	—	42
11. Sunauli-Pokhara	—	—	80	80
12. Kathmandu-Trisuli	—	—	69	69
13. Dhangarhi-Dadheldhura	—	—	45	45
14. Kathmandu-Janakpur	—	—	143	143
15. Krishnanagar-Piuthan	—	—	24	24
16. Nepalgunj-Surkhet	—	—	43	43
Total:	170	173	569	912

During the Second Plan also, top priority was given to transport development. Its target was to construct 1,440 Km. of roads, including 1,120 fair weather and 320 Km. all-weather. By the end of this Plan, only 927 Km. of roads were constructed, of which 71 Km. were fair weather and 856 Km. of all-weather.

TABLE 64

PROGRESS ACHIEVED IN SECOND PLAN 1962-65

(Length in Kilometres)

Name of the Projects	Black-top	Garvel	Fairweather	Total
1. East West Highway	—	—	621	621
2. Kathmandu-Kodari (Arniko)	9	—	95	104
3. Sunauli-Pokhara	—	14	13	27
4. Raxaul-Bhainse	—	24	—	24
5. Kathmandu-Dakhinkali Road	—	6	—	6
6. Kathmandu-Budhanilkantha	—	—	6	6
7. Sinamugal-Bhaktapur	—	8	—	8
8. Rajbiraj-Kunouli	—	5	8	13
9. Birgunj-Kalaiya	—	—	13	13
10. Nepalgunj-Gosain goun (Village)	—	1	—	1
11. Taulihawa-Khunuwa	—	4	7	11
12. Koilabas-Ghorahi	—	—	64	64
13. Ratna Highway (Jalkundi-Dang airport)	—	—	29	29
Total:	9	62	856	927

Thus, before the beginning of the Third Plan, all types of road available in the Kingdom of Nepal were 1,826 Km. which included 289 Km. black top, 147 Km. gravel and 1,390 Km. fair-weather.

According to the revised target of the Third Plan (1965-70), it was envisaged to construct 1,365 kilometres of roads, including 758 kilometres all-weather and 607 kilometres fair-weather. Out of this, 1,009 kilometer or 80 per cent of the target has been achieved including 405 Km. black top, 230 Km. gravel, and 455 Km. fair-weather roads. The following Table clearly shows the picture of the progress achieved in the Third Plan.

TABLE 65

PROGRESS ACHIEVED IN THIRD PLAN IN TRANSPORT AND COMMUNICATION SECTOR (1965-70)

In Kilometers

Projects	Target of the Plan		1965-66			1966-67			1967-68		
	Pitch[2]	F.W.[1]	Pitch[2]	Gravel	F.W.[1]	Pitch[2]	Gravel	F.W.[1]	Pitch[2]	Gravel	F.W.
1	2	3	4	5	6	7	8	9	10	11	12
1. Highway											
a. Mahendra Highway											
1. Janakpur-Jhapa	150	114	—	—	—	—	—	—	—	—	77
2. Simra-Janakpur	117	—	—	—	—	—	—	10	1	10	43
3. Narayangadh-Butwal	—	122	—	—	—	—	—	—	—	—	—
b. Arniko High-way	105	—	—	43	61	77	27	—	—	—	—
c. Sidhartha Highway	209	—	27	—	183	—	32	—	16	70	—
d. Prithivi Highway	—	176	—	—	—	—	—	3	—	3	47
2. Main Roads											
1 Dhangarhi-Dadheldhura	—	70	—	—	—	—	—	—	—	—	6
2. other Roads[3]	177	125	24	26	6	24	96	—	32	19	13
Total	758	607	51	69	250	101	165	13	40	102	180

1 Fair weather

2 Includes both black top and gravel roads.

3 Other roads include: Swayambhu road, Birgunj-Kalaiya, Maharajgunj Leather & Shoe Factory, Taulihawa-Khunwa, Rajbiraj-Kunauli, Narayani Ferey, Balaju road, Gokarna Rajnikunja, Dakshinkali, Jawalakhel-Lagankhel, Bhainse-Hetauda, Janakpur, Kosi, Nepalgunj-Khajura, Dharan--Dhankuta, Mechi main road, Kathmandu town roads and Pokhara roads.

Projects	1968-69			1969-70			Total of the (1965-70)		
	Pitch[2]	Gravel	F. W.[1]	Pitch[2]	Gravel	F. W[1]	Pitch[2]	Gravel	F, W.[1]
1. a. 1.	4	63	123	23	19	4	43	83	110
1. a. 2.	15	28	—	13	—	13	28	26	11
1. a. 3.	—	—	—	—	—	—	—	—	—
1. b.	—	—	—	—	—	—	77	27	—
1. c.	97	69	—	30	—	2	170	16	2
1. d.	—	13	43	—	—	80	—	20	156
2. 1.	—	—	22	—	—	37	—	7	65
2. 2.	3	—	—	13	—	97	87	51	111
Total	119	173	188	79	19	233	405	230	455

Compared with the previous Plans, achievement in the field of roads construction during the Third Plan is quite encouraging. The following Table clearly shows the figure of achievement compared to the target.

TABLE 56

ROAD CONSTRUCTION TARGETS & ACHIEVEMENTS OF THE FIRST, SECOND AND THIRD PLANS

(Length in Kilometres)

	All-weather[3]	Fair-weather	Total
Before commencement of First Plan	259	365	624
Target of the First Plan	480	960	1,440
Progress of the First Plan	343	569	912
Percentage	71	59	63
Fiscal Year (1961-62)	77	101	178
Target of the Second Plan	320	1,120	1,440
Progress of the Second Plan	71	856	927
Percentage	22	76	64
Target of the Third Plan	758	607	1,365
Progress of the Third Plan	635	455	1,090
Percentage	80	78	79

By the end of the Third Plan, the total length of roads in Nepal is estimated to be 3,731 Kilometres. In the process of development the sub-standard roads, including fair-weather ones, were successively improved and standarised. Accordingly, the net availability of roads before the implementation of the Fourth Plan will be 2,730 Kilometres including 821 Km. black top, 435 Km. gravel and 1,474 Km. fairweather roads. The details are as follows.

TABLE 67

ESTIMATED LENGTH OF ROAD BEFORE THE BEGINNING OF THE FOURTH PLAN

(Length in Kilometres)

Project	Allweather	Gravel	Pitch	Total
(A) Highway				
1. Mahendra Highway				
a. Jhapa-Dhalkewar Sector	106	150	—	256

1 Fair weather

2 Includes black top and gravel roads

3 Includes pitch and gravel roads

b. Pathlaiya-Dhalkewar "	32	—	54	86
c. Pathlaiya-Hetauda "	—	—	27	27
d. Hetauda-Narayangadh "	—	83	—	83
	138	233	81	452
2. Tribhuban Rajpath				
a. Kathmandu-Bhainse	—	—	115	115
b. Bhainse-Birgunj-Raxaul	—	—	74	74
	—	—	189	189
3. Arniko (Kodari) Highway	—	27	77	104
4. Sidhartha Highway	—	—	209	209
5. Prithvi Highway	136	40	—	176
	136	67	286	489
(B) Main Roads				
1. Nepalgunj-Surkhet	25	—	—	25
Total of A + B	299	300	556	1,155
(C) Feeder Roads				
1. Biratnagar-Rangeli-Jhapa	88	—	—	88
2. Dharan-Jogwani	—	—	50	50
3. Rajbiraj-Kunauli	—	—	13	13
4. Rajbiraj-Hanumannagar-Sirha	61	—	—	61
5. Kosi Road	—	52	—	52
6. Sirha-Jayanagar	8	—	—	8
7. Kunauli-Hanumannagar-Fattepur	10	—	—	10
8. Jaleshwor-Mattihani	6	—	—	6
9. Jaleshwor-Malangwa	51	—	—	51
10. Malangwa-Sonbarkha (Border)	3	—	—	3
11. Janakpur-Jaleshwor (Border)	21	—	—	21
12. Janapkur-Dhanukha	8	—	—	8
13. Janakpur town-Airport	—	—	3	3
14. Janakpur-Dhalkewar	23	—	—	23
15. Gaur-Bairganniya	1	—	—	1
16. Birgunj-Kalaiya	—	11	—	11
17. Kathmandu-Trisuli	—	22	45	67
18. Bhaisen-Bhimphedi	11	—	—	11
19. Narayangadh-Madi	64	—	—	64
20. Bhairahwa-Taulihawa	48	—	3	51
21. Bhairahwa-Tribeni	64	—	—	64
22. Bhairahwa-Pakklihawa	—	—	6	6
23. Taulihawa-Khunuwa	—	—	11	11
24. Taulihawa-Lumbini	—	—	8	8
25. Ratna Highway (Jalkundi Dang airport)	29	—	—	29
26. Koilabas-Jaruwa (Border)	2	—	—	2

27. Nepalgunj Road	—	—	6	6
28. Koilabas-Ghorahi	64	—	—	64
29. Nepalgunj-Gulriya (Bardiya)	38	—	—	38
30. Gulriya-Murtiha (Border)	9	—	—	9
31. Krishnanagar-Terai (part of Piuthan)	24	—	—	24
32. Dhangadhi-Dadheldhura	27	23	—	50
33. Mechi main road	55	—	—	55
34. Kathmandu-Janakpur	56	—	—	56
35. Bilor-Dhangadhi	48	—	—	48
36. Gulriya-Dhangadhi	99	—	—	99
37. Chatra-Dharan	16	—	—	16
38. Hanumannagar-Bhimnagar (Border)	6	—	—	6
39. Chandragadhi-Mechi (Border)	3	—	—	3
40. Brahmhadevmandi-Bilauri	48	—	—	48
41. Tauliihawa-Patharkot	29	—	—	29
42. Rajbiraj-Lahan	38	—	—	38
43. Bhimnagar-Chatra	19	—	—	19
44. Kathmandu area road	98	27	120	245
	1175	135	265	1575
Total A+B+C	1474	435	821	2730

Thus out of 2,730 kilometres, 1,474 kilometres or 54 per cent is still classified as fair weather roads mostly feasible for jeeps. As such, these roads are negligible when compared to our requirements. For example, the road kilometres per 100 thousand population in Nepal will come to around 24 Kms. while the ratio in other countries comes to approximately 5.5 Km. Similarly, the motorable road available per vehicle comes to 0.4 Km. Likewise, the vehicles available per 100 thousand population in Nepal in 1968-1969 was 31, while in Ceylon and the Phillipines the totals were 903 and 483 respectively.

6. Role of Transport in the Fourth Plan:

The Road development programme in the Fourth Plan has been designed on the basis of a Twenty Year Perspective Plan aiming to connect the districts and the zonal headquarters by 1985. Efforts will, therefore, be made to complete the Mahendra Highway, as well as the construction of new highways and trunk roads which will link those areas of the Himalayan, Hilly and Terai regions having complementary economic relations. Furthermore, a crash programme of road development will be encouraged based on scattered development potentials as judged from qualitative analysis. The short description of the road development programme in this Plan will be as follows:

TABLE 68

ROAD DEVELOPMENT PROGRAMME IN THE FOURTH PLAN

(Length in Kilometres)

Project	Total	Pitch	Gravel	Fairweather
(a) Completion of continuing projects	771	477	294	—
(b) Remaining portion of Mahendra Highway (Western Sector)	520	83	200	327
(c) Growth Axis Road	264	—	229	35
(d) Inter District & District level Roads	150	—	150	—
(e) Urban Roads	25	25	—	—
(f) Roads to be constructed after Feasibility Study	100	—	100	—
Total:	1,830	585	973	272

Thus, with the completion of the above mentioned projects during the Fourth Plan, 1,830 Km. of roads will be constructed including 585 Km. of pitch, 973 Km. of gravel and 272 Km. of fair-weather.

6. (A) Completion of Continuing Projects

This includes the construction of the Mahendra Highway, stretching from Jhapa in the east to Kholapur in the west. Between Dhangarhi and Dadeldhura, a main road is now under construction. The length of this will be 771 kilometres, including 477 kilometres black top and 294 kilometres gravel usable for all-weather. Details of these roads are as follows:

TABLE 69

CONTINUING ROAD PROJECTS

(Length in Kilometres)

Name of the Projects	Pitch	Gravel	Fairweather
1. Mahendra Highway			
(a) Jhapa-Dhalkewar sector	213	—	—
(b) Dhalkewar-Janakpur-Jaleshwor	40	—	—
(c) Simra-Dhalkewar	89	—	—
(d) Narayangadh-Butwal	122	—	—
(e) Kamala Bridge	—	—	—
2. Prithvi Highway			
(a) Prithvi Highway	—	156	—
3. Main roads			
(a) Dhangadhi-Dadheldhura	—	138	—
(b) Kathmandu-Bhaktapur	13	—	—
Total:	477	294	—

A (1) Jhapa-Dhalkewar sector (Jhapa-Dhalkewar-Janakpur and Jaleshwor):

The construction work of this project was initiated during the year 1967-68 as a part of the Mahendra Highway in the Eastern Terai portion. By the end of the Third Plan 83 Km fair-weather, 110 Km gravel and 43 Km. black top were completed. In the first year of the Fourth Plan, the entire length of 256 Km from Jhapa to Janakpur, including black topping, will be completed. Completion of this road will inter-link the area of greatest potential development in the east. This will help the industrial areas of Mechi, Kosi, and Janakpur zones, take full advantage of the highway, thereby, enhancing the volume of their internal trade as well as their exporting capacities by linking the food-growing area of the Eastern Terai. Apart from this, the highway will facilitate the transportation of raw materials needed for local industries.

In this highway there will be 119 major and minor bridges, 1,500 culverts, and 52 causeways.

The process of black topping the 23 kilometre fair-weather road which connects Jaleshwor with Janakpur will be completed in the first year of the Fouth Plan. This project was started in the year 1968-69. Completion of this road will connect and therefore contribute a great deal to the industrial areas of the Eastern Terai.

A. (2) Kamala bridge:

This bridge is designed to connect the Jhapa-Janakpur sector with the Simra-Janakpur Highway. However, its need in the past has not been mentioned anywhere. In the absence of this bridge, the entire utility of the East-West Highway would be reduced. Consequently, the construction of this bridge will be completed during the Fourth Plan.

A. (3) Simra-Janakpur (Dhalkewar-Pathlaiya):

This sector, which is a part of the Mahendra Highway in the east, was planned to be completed in the Third Plan. However, because of several factors, it was possible to complete only 28 kilometres of black top and 26 kilometres of gravel and two other bridges during the Third Plan. During the Fourth Plan, it has been envisaged to complete the entire road in black top. Completion of this road will link the important areas of Janakpur and Narayani zones. Besides this, the sector to be constructed with Indian cooperation stretching from Jhapa to Janakpur will be ready in 1971 and will help to bring together the people of Jhapa and Kathmandu by increasing cultural contacts.

Up to the Bagmati, 8 major bridges and 72 small bridges and culverts are needed. From Bagmati onwards, another 17 major bridges and 50 minor bridges and culverts are estimated to be required.

A. (4) Narayangarh-Butwal:

The existing portion of the Mahendra Highway from Narayangath west to Butwal was supposed to be built as a fair-weather road in the Third Plan with the assistance and credit of the British Government. The 122 kilometre road will be converted to black top by the end of this Plan

period. This will link the Narayani and Lumbini zones together with creating an area of potential development in central Nepal.

A. (5) Prithvi Highway:

This road starts from Naubise, a point on the Tribhuban Highway, connecting Dharke, Galchi, Gajuritar, Muglinphant and Damauli to Pokhara. This project was begun in 1967-68 with Chinese Aid During the Third Plan, out of 176 kilometres, 20 kilometre of gravelting had been completed, and the first jeep has already reached Pokhara. The entire length of the road will be gravelled by the first half of the Fourth Plan. Completion of this road will connect the central hilly regions of Bagmati, Narayani and Gandaki zones. This will facilitate the growth of horticulture centres and other similar development projects in turn increasing the standard of living of the local people. This road will also carry both tourists and pilgrims to Bandipur, Gorkha and Manakamana areas and will contribute towards increasing the national income.

Main Road

A. (6) Dhangarhi-Dadeldhura:

The construction of 145 kilometres from Dhangarhi to Dadheldhura was started during the third year of the Third Plan, partially under American assistance. Sixty-five kilometres of fair-weather road were completed, both in the Terai and Hilly regions, by the last year of the Third Plan. The entire length of the road will be gravelled by the fourth year of the Plan.

This road will connect the food deficit areas of the Far Western Hills, such as Doti, Baitadi, Achham and Bajura with the Terai. Moreover, this will facilitate the availablity of daily consumption goods and will create the necessary precondition for the development of these areas. The possibilities of horticultural and other developments in these districts are promising and can be explored extensively. The hills, particularly the Himalayan region, are favourable for the production of apples, walnuts and other fruits, which have a good export-market. Also about 6,000 maunds of ghee are exported to India every year through Rajapur Customs from the above districts. Completion of this project will increase direct contact between the producers and the consumers and will also help uplift the standard of the local people. This will also increase national and per capita income. Moreover, this road will bring the hinterland of Dadheldhura very close and will act as a forward link to Doti, Baitadi, Achham, Darchula, Bajura and Bajhang. Its importance has been further enhanced by economic and social needs. It will also help to lessen the regional disparity prevailing in the districts of the far western hills. It will have 43 major and minor bridges, along with 60 culverts.

A. (7) Bhaktapur-Kathmandu:

The number of passengers travelling daily along this route is approximately 5,641 by 31 buses. In fact, large quantities of vegetables and other food stuffs required in Kathmandu are supplied by areas served by this route. This route has facilitated the growth of inter-regional trade between Banepa, Dhulikhel, Barabise and Kathmandu. Of late, this road between Bhaktapur and Kathmandu has become quite narrow and congested

because of the increasing volume of traffic. This has resulted in significient inconveniences to passengers and increased dangers from accidents. In addition, the operating costs of the vehicles have increased considerably. Consquently, the increased cost in diesel and petrol alone has amounted to Rs. 500,000 annually.

Thus, as an alternative, a new road has been under construction with Chinese assistance from Thapathali to Bhaktapur since the fourth year of the Third Plan. The entire length of the 13 kilometre road will be black-topped during the first year of the Fourth Plan. Completion of this road will not only help the passengers, but will also reduce the operating costs and contribute indirectly to an increase in national income.

B. (1) Western Sector of the Mahendra Highway:

The 437 kilometre road from Nepalgunj (Kohalapur) to Banwasa comprises the remaining section of the Mahendra Highway. Of this, 200 kilometres will be gravelled and the remaining 237 Km. will be fair-weather road.

TABLE 70

CONSTRUCTION OF THE WESTERN SECTOR OF THE MAHENDRA HIGHWAY

(Length in Kilometres)

Name of the Project	Pitch	Gravel	Fairweather
1. Remaining portion of Highway on the western side of Butwal	—	200	237
2. Narayani bridge and Hetauda-Narayangadh road improvement	83	—	—
Total:	83	200	237

A. (1) Remaining portion of the Mahendra Highway in the western side of Butwal

The main centres to which agricultural products are brought down from the hills or produced and collected for marketing in the Terai are Nepalgunj, Rajapur, Dhangarhi and Mahendranagar. These serve both as export centres for agricultural commodities and import-centres for consumer goods from India. Mahendranagar is a flourishing trade centre but because of transport difficulties, it conducts all of its trade with India instead of the Terai area to the east.

Completion of this road will facilitate the linking of the districts of Seti, Bheri, Mahakali and the Terai portion of Rapti and Lumbini zones, as well as helping to increase the exporting capacity of these areas. The need for this highway has also been regarded as most urgent because it will connect important parts of the country: i.e., the hills with the resource rich area in the East and West Terai. The road would also help to integrate the economies of these areas.

B. (2) Hetauda-Narayangarh and Narayani Bridge:

In the Third Plan, survey and investigation work were completed for the raising of the Hetauda-Narayangarh road to highway standards. This road is a connecting link to the Mahendra Highway in the Western sector.

The construction work on this 83 kilometre long highway will be black topped by 1974-75, along with the improved bridges and culverts which are needed.

Appropriate arrangements will be made to continue transportation across the Narayani river. There has been a ferry-service across this river for some time. During the Third Plan, an economic and technical investigation reached the final stage, and during the Fourth Plan, either a bridge or a ferry will be established, depending upon the recommendations of the report.

C. Growth Axis Roads construction

Because of the excessive mountain terrain on the Northern part of Nepal and the low land of the Terai, the occupations, production, and potentiality of these two areas are basically different. A north-south road has, therefore, become essential to facilitate the movement of complementry products from the hills to the Terai and the Terai to the hills. In addition, intra-regional trade would also gather momentum.

Moreover, the hilly region, in general, is a food deficit area while the Terai is a surplus area. Therefore, encouragement should be given to the production of commodities other than cereals in the hills. If the rules of comparative advantage are used, this should, in turn, help to increase the standard of living of the local people. It has been felt that a north-south road is necessary to harness all these development potentials.

In the Fourth Plan, the need for north-south road has been considered to be most urgent. It would provide a 'bigpush' to the development programme in the backward regions and help in eleminating regional disparities. Accordingly, road facilities, as a stimulus to "Regional development", will be made available to Jumla in the Karnali region, Jomosom in the Gandaki region, Dhunche and Barabise in the Bagmati region, and Khandbari in the Kosi reigon. These represent the Himalayan, Hilly and Terai regions along with Eastern, Central and Western parts of the country. The total length of such roads is estimated to be 840 kilometres of which 254 kilometres will be constructed in the Fourth Plan. In the Bagmati region, since the road linking Barabises is already in service, only the following road projects will be undertaken.

TABLE 71

CONSTRUCTION OF GROWTH AXIS ROADS DURING THE FOURTH PLAN

(Length in Kilometres)

Name of the Projects	Pitch	Gravel	Fairweather
1. Nepalgunj-Jumla road (up to Surkhet)	—	77	—
2. Putlikhet-Baglung-Tukuche-Jomosom (From Putlikhet upto Baglung)	—	80	—
3. Trisuli-Dhunche	—	25	—
4. Dharan-Dhankuta-Khandwari (From Dharan upto Dhankutta)	—	72	—
Total:	—	254	—

C. (1) Nepalgunj-Jumla:

This road is a part of the Western trunk route which will pass from Kohalapur to Jumla, connecting Surkhet, Kalikot and Dailekh. The total length will be 250 kilometres. By now, the airfields in Nepalgunj Surkhet and Jumla have been alleviating the transport problems of this area. But only a fraction of the well-to-do-class have been able to take advantage of this facility. Furthermore, the limited land resources and low productivity in the hills have made people move in search of employment and trade opportunities in the Surkhet, Dang and Nepalgunj areas. This will shift the population from Dailekh, Jumla and the surrounding areas to Surkhet, Dang and Nepalgunj, thereby giving rise to a likely population problems in the future. Therefore, construction of this road can help in the establishment of small development projects which, in turn, will partially help to solve the unemployment problem.

In the Fourth Plan, 77 kilometres of road connecting Nepalgunj and Surkhet will be constructed. Since Nepalgunj is the trading centre of western Nepal, road will open up the surrounding districts and enable them to expand their trade.

C. (2) Putalikhet-Baglung-Tukuche-Jomsom:

This is a feeder road of the Siddhartha Highway, connecting Bhairahawa, Palpa, Syangja, Pokhara, Baglung, Tukuche and Jomson in Mustang district. With exception of one STOL airfield in Jomsom, other modern means of transport are not available in this area. This has, therefore, been considered to be an in-accessible area. Moreover, this road is not only necessary to create willingness among the local people to participate in the development projects, but also to obviate the difficulties lying in education and health. Construction of this road will also help develop tourism, as well as enable a greater inflow of pilgrims to Muktinath. It will help develop the surrounding villages as well. During the Fourth Plan, 80 kilometres of this road from Putlikhet to Baglung will be constructed.

C. (3) Trisuli-Dhunche-Gatlang:

Although the route to Dhunche passing through Birgunj, Hetauda, Kathmandu and Trisuli was mentioned in the policy guidelines of the draft of the Fourth Plan, the economic and technical survey found this route to be unfeasible. Consequently, an alternative route to Syabru and Gatlang has been considered. The total length of this route will be 150 kilometres of which the 70 kilometres from Kathmandu to Trisuli is already in existance as a fair-weather road, which will be black topped in the Fourth Plan. Thus from Trisuli to Gatlang, 80 kilometres must be constructed. During the Fourth Plan, 35 kilometres of jeepable track from Trisuli to Dhunche will be constructed on a fair-weather basis. With this road construction dairy, horticulture, and other activities can be developed. Moreover, the facility will attract a greater number of tourists and pilgrims to Gosaikunda. This road can further help to exploit the unutilized timber resources of Gatlang areas-amounting annually to approximately 2 million cu. ft., with Kathmandu serving as a potential market.

C. (4) Dharan-Dhankuta-Khandbari:

This route will provide limited modern transport facilities to the local people of Sanskhuwasabha, Taplejung, Terathum, Dhankuta, Bhojpur and the surrounding districts. With regard to modern transport facilities, there is only one airfield at Tumlingtar.

In the Fourth Plan, the 72 kilometres from Dharan to Dhankuta will be made motorable for general vehicles. This will solve to some extent the transport problem in the districts of Dhankuta, Terathum, Sankhusabha, Taplejung and Bhojpur. The Khuku and Chintang orange which are famous all over India and Nepal will be provided with larger markets. This will stimulate the local people to develop the more profitable horticultural farmings instead of cereal foods as a source of enhancing their incomes. In the future, Dhankuta can become a citrus fruit centre, having a linkage effect upon other districts as well. The completion of this road will facilitate the development of adjoining areas and also lessen regional disparities.

D. Inter-district and Intra-district roads:

The Eastern Terai portion of the Mahendra Highway and a portion of the Prithvi Highway in the hills are already in service. In order to make these roads more important economically, the market centres, populous areas and productive areas must be connected. Moreover, it is even desirable to provide transport facilities in and between districts for social reasons.

The present highway, now under construction, is away from the market centres and other productive areas. Therefore, during the Fourth Plan period, it has become necessary to construct feeder roads to link the productive areas and populous regions with the highways.

Under this programme, Jhapa, Kapilavtu and Rautahat in the Terai, Dang in Inner Terai and Chautara and Gorkha in the hills have been given prime consideration. The total length of these roads constructed during the Plan be 150 kilometres of gravelled surface. Details are as follows:

TABLE 72

INTER DISTRICT AND INTRA DISTRICT ROADS

(Length in Kilometses)

Name of the Projects.	Physical target
1. Gorkha-Prithvi Highway	25
2. Chautara-Arniko (Kodari) Highway	26
3. Gaur-Mahendra Highway	33
4. Krishnagar-Bahadurgunj-Mahendra Highway	20
5. Dang-Mahendra Highway	16
6. Chandragadhi-Mahendra Highway	16
7. Rajbiraj-Mahendra Highway	14
Total:	150

D. (1) Gorkha-Prithvi Highway:

Gorkha currently supplies some of its surplus products to Rasuwa, Nuwakot, Dhading, Lamjung, Tanahu and Kaski districts. The interconnection of these districts through the development of road will quicken the pace of economic development as well as increase the standard of living of the local people. Its historical background and natural beauty have made Gorkha a potential tourist centres.

During the Plan period a gravelled feeder road will be constructed to reach Gorkha. The total length of this road will be 25 kilometres. It will be a feeder road to the Prithvi Highway.

D. (2) Chautara-Arniko (Kodari) Highway.

A fair-weather jeepable track connecting the Arniko Highway with Chautara has already been constructed in Sindhupalchok district with the voluntary labour of the people. This district has partially supplied the growing demand for meat and fish in Kathmandu. The conversion of this road to an all-weather one will enable it to bear large vehicles, thereby extending the market for fruits and ghee of this area. In addition, there are favourable prospects for the development and promotion of the cheese industry.

During the Plan period, the existing road will be gravelled and its width increased. The total length of this road will be 26 kilometres.

D. (3) Gaur-Mahendra Highway:

This area through which the road will pass is the most fertile in Rauthat district. However, the lack of markets has restricted the promotion and development of local products. Moreover, cash crop like sugarcane are grown to a greater extent because they are easily irrigated by the Bagmati river. In the Plan period, a feeder road from Mahendra Highway to Gaur will be constructed. The total length of 33 kilometres will be gravelled. Completion of this road will enable products from this district to have access to markets. It will be easier for Birgunj Sugar Factory to run at full capacity because the road will connect it to the sugarcane growing areas in Gaur.

D. (4) Krishnanagar-Bahadurgunj-Mahendra Highway:

Krishnanagar and Bahadurgunj are important among the trade centres and other notable areas of the Western Terai. Even in terms of population, these two towns rank high in the region. They cater to the export and import trade of hilly districts such as Piuthan and Argakhanchi. Therefore, it has become extremely necessary to connect these areas with the hilly districts through proper roads. The important exports from these areas are paddy, sugar-cane and timber. In Krishnanagar alone, approximately 2,000 hectares are under sugarcane cultivation. The past plans have encouraged the growth of small development projects in these areas. Consequently, the need to interconnect these regions by road has become greater. Therefore, within the Fourth Plan, a 20 kilometre gravelled road will connect Krishnanagar and Bahadurgunj with the Mahendra Highway in such a way that it could be further extended to the hills in the north in the future.

D. (5) Dang-Mahendra Highway:

Dang district in the Rapti Zone in the Western Inner Terai acts as trading centre for the hilly districts of Sallyan, Piuthan, Rukum and Rolp A large amount of paddy, rice and ghee are exported through this rout Presently, transport bottlenecks have prevented the local products fro selling at higher prices. Thus, a 16 kilometre gravelled feeder road fro Dang to Mahendra Highway will be constructed. Construction of this roa will help take the local products to better markets as well as he improve the standard of living.

D. (6) Chandragadhi-Mahendra Highway:

Chandragadhi is the head quarter of the Jhapa district in Mechi Zon In fact, this district is the most prosperious and fertile in all of Nepal. Jhap district by itself produces 10 per cent of the total paddy production of t entire country. The completion of the Mahendra Highway will certainly he to augment internal and external trade, however, this goal will rema unfulfilled until a feeder road from Dhulabari to the most fertile area in south is constructed. Therefore, in this Plan, 16 kilometres of gravelled ro from Dhulabari to Chandragadhi will be constructed. Completion of th road will help the establishment of jute processing, paper and other allie industries.

D. (7) Rajbiraj-Mahendra Highway:

Rajbiraj has its own importance as the headquarters of Sagarmat Zone. Chandra canal and other such irrigation facilities have made this ar very fertile and densely populated. In addition to paddy, large quantities raw jute, mustard, timber and other goods are exported to India.

The present Mahendra Highway which passes through Lahan pro des a prospective market for the local products of Udaipur and other hil districts. This will also add to the income of the local people. Feeder ro construction from Rajbiraj to Mahendra Highway will facilitate the mov ment of foodgrains. Consequently, in this Plan period, about 14 kilometr of gravelled roads from Rajbiraj to Mahendra Highway will be construct

E. Urban Roads:

Under this project, 25 kilometres of black topped road will constructed in Kathmandu and other urban areas. The details are as follo

E. (1) Kathmandu Valley Roads:

Kathmandu is important for many reasons. As the capital of the cou try Kathmandu's urban population has been rapidly increasing. The numb of vehicles registered has increased from 1,845 in 1958 to 6,710 in 1968. Ho ever, the road capacity in Kathmandu has not increased at the same rate. has therefore been planned to increase the capacity of the roads as well to upgrade some of the roads by black topping.

E. (2) Other urban roads:

In this Plan, due consideration will be given to the roads in Pokha The improvement and construction work of the road in Pokhara will be

in 1971/72 and be completed in 1972/73. Pokhara needs roads because it is the main town for the Central Hills and has good prospects for tourism. Moreover, with the completion of the Sidharth Highway and the near completion of the Prithvi Highway, the expected increase in the volume of traffic of men and vehicles will require improved roads in Pokhara. In accordance with needs, the existing fair-weather roads of other urban areas will also be black topped.

F. Roads to be completed after the Feasibility Survey:

The World Bank team will conduct a technical and economic feasibility survey for roads throughout the country. In this Plan, about 100 kilometres of gravelled roads will be constructed according to the priorities of the survery report. The following roads have also been included in the survey:

Projects	100 Kilometers
1. Lahan-Okhaldhunga	
2. Kathmandu-Simra	
3. Dang-Jajorkot	
4. Jhapa-Taplejung	
5. Narayanghat-Prithvi Highway	
6. Banepa-Sindhuli-Dhalkewar	
7. Bhojpur-Mahendra Highway	
8. Thori-Bharatpur	
9. Others	

F. (1) Lahan-Okhaldhunga:

It has been estimated that the districts of Sagarmatha Zone (especially Okhaldhunga) have been facing deficits of about 7,677 metric tons of foodgrain every year. Lahan has been considered to be a main market centre to this area for both social and economic reasons.

Potatoes and fruits are grown in Udaipur and Okhaldhunga, but only for local consumption. Similarly, the cheese producing plant in Solukhumbu is incurring high transportation costs trying to get its products to market.

F. (2) Kathmandu-Simra:

The volume of traffic and the danger of accidents on the Tribhuban Highway have increased considerably. Also, the long route passing through steep hills and sharp bends has led to greater fuel consumption and shortened the lives of vehicles. This has brought to light the need for an alternative to the Tribhuban Rajpath which will be shorter, more comfortable, and more economic. The length of this road will be 96 kilometres instead of the 144 kilometres of the Tribhuban Rajpath.

F. (3) Dang-Jajorkot:

Substantial amounts of foodgrain, fruits, ghee, and other items are exported to India through Koilabas. Transport difficulties have posed a formidable problem to move the foodgrain to deficit areas like Jajorkot and Sallyan.

Oranges are grown in the districts of Sallyan and Jajorkot, and there is good potential for the development of these export-oriented horticultural products. If the linking of this road is possible, there are chances for the growth of a needed organised market which will promote exports of these products.

F. (4) Jhapa-Taplejung:

Both Ilam and Taplejung are deficit in foodgrains. Ilam alone imports about 2,728 metric tons of foodgrains from surplus areas of the country. Simultaneously, Jhapa exports 60,000 meteric tons of food-grains to India every year. If suitable transportation were available, foodgrains could easily be sent from Jhapa to these deficit districts in a shorter period of time and at a lower cost.

Also, there is the possibility of setting up a herb extraction plant in Taplejung which has a significant export potential. There is also potential for the development of potatoes, fruits, and tea farming in Ilam with good markets in India.

F. (5) Narayanghat-Prithvi Highway (Muglinphant):

Narayanghat, a small town in Chitwan, is flourishing as an important centre of trade and industrial activity. It has also absorbed large numbers of settlers from Gorkha, Bandipur, and other surrounding hilly areas. Development projects, such as the Rapti Valley Project has also generated some economic activity in this region. Presently, Narayanghat is serving as the main food-grain market centre for the hilly regions of Bandipur and Gorkha.

Substantial amount of mustard and timber are also exported from this area. Furthermore, this area has been supplying a great deal of fire wood to Kathmandu Valley.

Narayanghat Bazar is only 25 Km. away from Muglinphan, a village on the Prithvi Highway. Opening a feeder road from Narayanghat to Muglinphant will link the districts of Lumbini, Gandaki, and Bagmati zones. Besides, a straight route would be opened between Birgunj and Pokhara on the one hand and Bhairahawa and Kathmandu on the other. Moreover, this will provide a more convenient and speedy route than the Tribhuban Highway to the residents of Nawalpur. Via Tribhuban Highway it is about 200 kilometers to Kathmandu. However, by the new route coming up from Narayanghat via the Prithvi Highway, it will be about 135 kilometres only. In addition, this will facilitate foodgrain movement at fair prices from Chitwan and Nawalparasi to Bandipur, Gorkha, Tanahu and Pokhara during times of food shortage.

F. (6) Banepa-Sindhuli-Dhalkewar:

For many years, Tribhuban Highway has been the only motorable road for all people coming from either the east or west to Kathmandu. It has not only caused many inconveniences to the people, but also led to the wasting of national resources. Thus, it has become essential to link Kathmandu with Janakpur through Banepa, Sindhuli and Dhalkewar. This will serve as

another arterial route from Kathmandu to other parts of the Eastern Terai region. It will facilitate the movement of man and material, as well as reduce the pressure of accidents on the Tribhuban Highway. For the districts of Janakpur Zone, this road will serve as a base for development. Also, from an economic point of view, such a road will help in extending the trade of Ramechhap, Dhulikhel and Dolkha and the other hilly regions with other Terai centres and Indian markets.

G. Foot tracks, Mule tracks and Jeep tracks:

The road development programme to be initiated in the Fourth Plan will not, however, connect all parts of the country by motorable roads. Thus with the exception of Kathmandu, the Terai and some other parts of the hills, the need for foot and mule tracks will remain for some decades to come. The total length of such trails in Nepal has been estimated to be 10,000 kilometres. The village people generally must pass over such trails for trade and purchase of their daily consumption.

Inaccessible areas will be connected through motorable roads in accordance with the long term plan, However, our limited resources are not adequate for such immediate transport undertakings. Therefore, about 1,652 existing foot and mule tracks in the following districts will be improved and constructed, keping in mind the growing needs of the localities. The details are given below:

TABLE 73

FOOT TRACKS, MULE TRACKS AND JEEP TRACKS

District	Track	Kilometre
1. Bardiya	(a) Chisapani-Bardiya	45
2. Bhojpur and Dhankuta	(a) Chainpur-Dingla	16
3. Gulmi	(a) Musikot-Ridibazar	20
4. Ilam and Terathum	(a) Lumude-Terathum	10
5. Dailekh and Surkhet	(a) Surkhet-Dailekh	40
6. Sindhuligadhi and Dolkha	(a) Charikot-Simigaon	32
7. Taplejung	(a) Mitlung-Olanchungola	64
	(b) Okhaldhunga-Dhunsa-Yangma	32
	(c) Dhule-Tapkegola	48
8. Sankhuwashabha	(a) Kimathadhka-Bhotbas-Khandwari	96
	(b) Tamphu-Hedhangma	40
9. Solukhumbu	(a) Sallery-Namchebazar	96
10. Dolkha	(a) Charikot-Lamobagar	32
	(b) Changu-Phopar	20
11. Sindhupalchok and Dolkha	(a) Choutara-Dholkha	53
	(b) Sipa-Helambu	35
	(c) Balefi-Golche	24
12. Rasuwa and Nuwakot	(a) Trisuli-Dandagaon	22

13. Dhading	(a) Charangphedi-Langtang	25
	(b) Chilunilu-Border	48
14. Gorkha	(a) Larke-Aarughat	64
15. Manang	(a) Thoche-Larke	32
	(b) Chame-Sattalle	48
16. Mustang	(a) Kagbeni-Chusang	40
	(b) Tatopani-Tiplang	24
17. Dolpa	(a) Dhorpatan-Dolpa	96
	(b) Charka-Tusare	30
18. Tibrikot	(a) Tibrikot-Dolpa	64
	(b) Tribeni-Jharal	24
	(c) Lum-Rimicho-Patan	40
19. Jumla and Mugu	(a) Jumla-Rara	5
20. Mugu	(a) Rara-Gamgadi	8
21. Humla	(a) Simikot-Wabha	72
	(b) Limi-Muchu	4
22. Bajhang	(a) Chainpur-Saipala-Bithlarlake	56
23. Darchula	(a) Biyas-Darchula	54
	(b) Biyas-Tinker	15
24. Baitadi and Darchula	(a) Baitadi-Darchula	68
	Total:	1,652

H.Suspension Bridges:

About 27 suspension bridges will be constructed in those 21 districts of 13 zones which have been considered the most backward in terms of transportation facilities and the most sparcely populated. This will provide some of the economic and social needs. They will be located in the following locations.

TABLE 74

PROPOSED SUSPENSION BRIDGES IN THE FOURTH PLAN

(Length in feet)

Location	River	District	Length
1. Puchighat	Sunkosi	Sindhuli	400
2. Nawalpurghat	Sunkosi	Ramechhap	450
3. Sisaghat	Madi	Tanahu	350
4. —	Langtang	Rasuwa	220
5. Kusmaghat	Modi	Parbat	260
6. Siwalaya (Giri)	Khimti	Dolkha	200
7. Pilwaghat	Pilwa	Sankhuwashabha	260
8. Near Soludhovan	Dudhkosi	Solukhumbu	300

9. Raighat	Sunkosi	Udaipur	450
10. Near Tallu Village	Bheri	Jajarkot	300
11. " "	Tamor	Panchthar	330
12. Kabeli and Tamor *	Kabeli	Panchthar	260
13. Purtighat *	Krishnagandhaki	Parbat	260
14. Ranighat	"	Palpa	500
15. Badegaon *	Ili	Gulmi	350
16. —	Marin	Kavrepalanchowk	400
17. Madhumalla	Tamor	Terathum	350
18. Kalkitar	Krishnagandaki	Gorkha	450
19. Saleri	Muni	Sallyan	220
20. Chiyang	Babahi	"	260
21. Nayaramghat	Dudhkosi	Ramechhap	350
22. Samusdhovan	Samsu	Udaipur	300
23. Rasuwadobhan	Rasuwa	Rasuwa	300
24. Charekotar	Kalangi	Bajhang	220
25. Choulani	Choulani	Baitadi	260
26. Tumlingtar	Samakhola	Sankhuwasabha	300
27. Rangaghat	Thulibheri	Surkhet	300

I. Bridges and Culverts Construction and Improvement:

The growing need for bridges and culverts in all parts of a country like Nepal which is surrounded by rivers and streams, is indisputable. But, it is evident that limited resources do not permit us to construct and improve bridges in all places at the same time. Therefore, HMG will construct bridges over those rivers with the greatest traffic. In addition, alternative routes will be considered keeping in view the volume of traffic.

Also, four worn-out bridges in Kathmandu which are not capable of bearing any further heavy load will be replaced and constructed according to a new standard.

J. Roads to be improved:

Due to a rapid increase in the volume of men and material, and the use of heavy vehicles, about 400 kilometres of roads which were classified as substandard in the Third Plan will be improved considerably. The name of roads are as follows:

1. Raxaul-Hetauda and Kathmandu-Hetauda (Tribhuwan Highway)
2. Kathmandu-Trisuli
3. Other roads (Padma road, Biratnagar, Rangeli etc.)

J. (1) Raxaul-Hetauda and Kathmandu-Hetauda (Tribhuvan Highway)

These roads being the important access to the capital have been vital in view of the movement of men and materials. During the Third Plan, the width of the Raxaul-Hetauda section was widened to 6 metres and was black topped. In this Plan, the improvement of corners, culverts and other related improvements will be continued.

* Expected to be constructed with World Bank loan.

In addition to this, the Naubise-Kathmandu section of the Tribhuvan Rajpath will have to be improved considerably in view of the expected increase in the traffic from Pokhara.

J (2) Kathmandu-Trisuli:

The existing gravel road has been improved at all levels during the Third Plan. During the Fourth Plan, the gravel road will be converted into black top.

K. Miscellaneous:

It has become quite essential to improve the methodology of the formulation of development projects during the process of development. Therefore, in the Plan, proper arrangements will be made for studying the construction of new roads. The report available from this study will certainly form a dependable base for this Plan, and more particularly, for the Fifth Plan.

By the end of this Plan, more black top roads will be ready, although they may not be able to meet our requirements. Future generations can receive the benefits only when these roads are properly maintained. Therefore, due consideration will be given to the protection and maintenance of the national road network. Attention has been given to making the Road Department more efficient by saving expensive and modern equipments However, arrangements will be made to provide the essential equipments.

Since road construction has been carried out on the basis of the knowledge and experience of other countries, construction materials, equipment, and techniques have accordingly been foreign. However, it seems very unsatisfactory to continue this system. Therefore, a construction material laboratory for testing the utility of construction materials will be esablished. Thus, if these facilities can be developed properly, it will lead to reduced construction costs for road development through the utilisation of local materials and the savings of foreign exchange.

In order to complete these programmes, the decision will be finalised after necessary consultation with the U.N.D.P. Special Fund and the I.D.A During the Fourth Plan it is hoped to complete the entire programme.

Financial Outlay, Past and Present:

1. From the very beginning of planning in Nepal, the road development programme has been given top priority. In the First Plan, out of a total 330 million rupees, 111.5 million rupees was earmarked for the development of transport and communications. By the end of the First Plan, 94.9 million rupees or 85 per cent of the total outlay were actually spent. Investment and expenditure in the field of transport and communication are given below:

TABLE 75

PLAN OUTLAY AND EXPENDITURE IN THE TRANSPORT AND COMMUNICATION SECTOR (1956-61)

Project	Amount allocated in First Plan	(Rs in Thousand) Expenditure	Percent
(a) Transport	10,40,00	8,78,29	84%
1. Road	5,00,00	5,65,96	111%
2. Railway	3,30,00	11,21	3.3%
3. Ropeway	1,50,00	2,50,16	167%
4. Aviation	60,00	50,96	85%
(b) Communication	75,00	70,71	93%
1. Telephone	25,00	Not available	
2. Wireless	25,00	"	
3. Postal	25,00	"	

From the above, the trend of planned expenditures has been encouraging, except in the case of railways.

2. In the Second Plan, 143.5 million rupees were allocated for the transport and communication development. Of the total outlay, 93.5 million rupees or 65 per cent was spent. Details of targeted expenditure in transport and communication are as follows:

TABLE 76

PLAN OUTLAY AND EXPENDITURE IN THE TRANSPORT AND COMMUNICATION SECTOR (1962-65)

Projects	Amount allocated in Second Plan	(Rs in thousand) Expenditure	Per cent
(a) Transport	13,75,00	8,62,00	63%
1. Road	11,25,00	6,34,00	56%
2. Aviation	2,50,00	2,28,00	91%
(b) Communication	60,00	73,00	120%

3. During the Third Plan, 615 million rupees or 36 per cent of the total outlay in public sector was allocated for transport and communication. By the fourth year of the Third Plan about 431 million rupees or 25 per cent had already been spent. If the amount incurred in the fifth or final year Rs. 271.6 million is also added, the total amount will reach 702.6 million rupees or 40 per cent of the planned target. In other words, expenditure incurred in the transport and communication sector becomes 4 per cent above the target. The details are given in the following Table.

TABLE] 77

FINANCIAL ACHIVEMENT OF THE TRANSPORT AND COMMUNICATION SECTOR UNDER THE THIRD PLAN PERIOD

Rs. in Thousand

Project	Third Plan Targets	Fiscal 1965—67		Fiscal 1966—67		Fiscal 1967—68		Fiscal 1968—69		Fiscal 1965—69	Fiscal 1969—70
		Original Estimate*	Actual Expdt.	Original Estimate*	Actual Expdt.	Original Estimate*	Actual Expdt.	Original Estimate*	Actual Expdt.	Total of 4+6+8+10	Original Estimate*
1	2	3	4	5	6	7	8	9	10	11	12
1. Road :	50,00,00	6,19,33	5,69,71	10,05,83	8,47,80	10,8[illegible],57	9,68,04	13,38,04	15,33,20	39,18,75	21,83,82
2. Civil Aviation	7,00,00	1,19,13	1,05,77	49,53	30,06	14,14	15,28	58,73	29,92	1,81,03	3,53,79
3. Ropeway Railway:	90,00	—	—	—.	—	—	—	—	—	—	21,00
4. Communi-cation**	3,60,00	66,81	53,00	56,77	[35,41	68,57	51,13	90,90	71,29	2,10,83	1,57,41
Total :	61,50,00	8,05,27	7,28,48	11,12,13	9,13,27	11,69,28	10,34,45	14,67,67	16,34,41	43,10,61	27,16,02

*Budget Estimate only

As shown in above Table 77 the capacity to spend in the transport and communication sector, with the exception of Civil Aviation is quite encouraging. For roads alone, 391.87 million rupees or 78 per cent was spent upto the fourth year of the Third Plan. If the 1969-70 budget is also included, the total in the final year would be 610.37 million rupees or 22 per cent above the target. The reason for this increase in spending capacity is due to the development of skill and willingness on the part of concerned authorities. Details of the expenditure for road development compared to the targeted amount are shown below:

TABLE 78

YEARWISE EXPENDITURE IN ROADS DEVELOPMENT IN THE THIRD PLAN

(Rs in thousand)

Fiscal Year	Budget	Expediture	Percent
1965/66	6,19,33	5,69,71	92%
1966/67	10,05,82	8,47,80	84%
1967/68	10,86,57	9,68,04	90%
1968/69	13,38,04	15,33,20	114%
1969/70	21,83,82	Not avilable	—

4. Financial Outlay for the Transport and Communication development during the Fourth Plan period:

Our economic development is still in the initial stage and as such, more investment must be done in the transport sector if we are to speed up development. In other words, transport requirements increase more rapidly than national income in the early years. For example, in many Asian countries the volume of traffic on roads and railways increased considerably, from 6 to 20 per cent in the 1950's, while national income increased only 2 to 5 per cent.

In general, project investment decisions should be made in terms of economic benefit. But in the initial stages, compared to direct and indirect total achievements, the investments required in the transport sector will be greater than other sectors, and the question of whether some portion of the investment should be directed to other sectors does not arise. In fact, education, health and the other development activities in Nepal have been found to be closely related to the development of transport. More investment in the transport sector should be made unless and until the preconditions for rapid economic development have been established. Since the Government controls the entire transport system, it is therefore necessary for the government to invest more for its expansion. Only then can we expect the mobilisation of capital from the private sector in the form of buses, trucks, and other vehicles. This will help in the development of industry, agriculture, and trade.

During this Plan, out of 2,550 million rupees allocated to the public sector, 1,050 million or 47 per cent has been earmarked for the transport and communication sector. This sum will be spent on different modes of transportation in the following order of priority:

TABLE 79

FINANCIAL OUTLAY IN TRANSPORT AND COMMUNICATION IN THE FOURTH PLAN

	(Rs. in Million) Target	Percent
Total Plan outlay	2,550	
Transport be Communication	1,050.00	41%
(a) Transport	1,010.00	
1. Road	813.10	
2. Civil Aviation	161.00	
3. Royal Nepal Airlines Corporation	10.00	
4. Nepal Transport Corporation	2.60	
5. Nepal Engineering Institute	23.30	
(b) Communication	40.00	
1. Telecommunication	36.75	
2. Postal services	3.25	

Financial Investment on Roads:

In the Fourth Plan, 813.1 million rupees or 82 per cent of total outlay in the transportation and communication sector, will be spent on road development. Furthermore, out of the 813.1 million rupees, the pattern of expenditure will be as follows: 533.4 million rupees for continuing projects; 91.8 million for the growth axis roads; 31 million rupees for inter-district facilities; 16.2 million rupees for urban roads; 30 million rupees for roads to be constructed after the feasibility survey; 9 million rupees for the foot and mule tracks; 49 million rupees for suspension bridges; 22.5 million rupees for the improvement of roads; and 30.2 million rupees for miscellaneous purposes. The details are given below:

TABLE 80

PATTERN OF EXPENDITURE ON ROADS DEVELOPMENT IN THE FOURTH PLAN

Name of the Project	(Rs in Million) Allocated amount	Percent
1. Current projects (Uncompleted activities)	330.4	40%
2. Current projects (Divisionwise activities on Mahendra Highway)	203.0	25%
3. Growth Axis Roads	91.8	11%
4. Inter-district & District level roads	31.0	4%
5. Urban Roads	16.2	3%
6. Roads to be constructed after feasibility study	30.0	4%
7. Foot tracks, Mule tracks and Jeep tracks	9.0	1%
8. Suspension bridges, Bridges and Culverts	49.0	6%
9. Roads to be improved	22.5	2%
10. Miscellaneous	30.2	4%
Total:	813.1	100%

From the above table, the continuing projects form 70 per cent and the growth axis 11 per cent of the total. Similarly, the allocation of resources for the other road development projections is given in the following table:

TABLE 81

DETAILS OF ROAD DEVELOPMENT ACTIVITIES IN THE FAURTH PLAN

Name of the Projects	(Rs. in Millions)
I. Completion of Current projects (Uncompleted activities)	330.4
(A) **Highway:**	
(a) **Mahendra Highway Sector:**	
1. Jhapa-Dhalkewar-Janakpur-Jaleshwor	121.1
2. Kamala bridge	8.0
3. Simra-Janakpur	30.0
4. Narayangadh-Butwal	76.5
(b) **Prithvi Highway**	57.5
(B) **Main roads**	
1. Dhangadhi-Dadheldhura	28.3
(C) **District roads**	
1. Kathmandu-Bhaktapur	9.0
II. Completion of Current projects (Divisionwise activities on Mahendra Highway)	203.0
1. Remaining portion of Highway from western side of Butwal	153.0
2. Narayani bridge and Hetauda-Narayangadh road improvement	50.0
III. Growth Axis Roads	91.8
1. Nepalgunj-Jumla	30.0
2. Putlikhet-Baglung-Tukuche	30.0
3. Nuwakot-Dhunche	1.8
4. Dharan-Dhankuta-Khandwari	30.0
IV. Inter district, Intra district	31.0
1. Choutara-Arniko (Kodari) Highway	
2. Gorkha-Prithvi Highway	
3. Gaur-Mahendra Highway	
4. Krishnanagar-Bahadurgunj-Mahendra Highway	
5. Chandragadhi-Mahendra Highway	
6. Dang-Mahendra Highway	
7. Rajbiraj-Mahendra Highway	
8. Others	
V. Urban roads	16.2
VI. Roads to be constructed after feasibility study	30.0
1. Lahan-Okhaldhunga	
2. Kathmandu-Simra	
3. Dang-Jajarkot	

4. Jhapa-Ilam-Taplejung	
5. Narayangadh-Prithvi Highway	
6. Benepa-Sindhuli-Dhalkewar	
7. Bhojpur-Mahendra Highway	
VII. Construction, maintenance and improvement of Foot, Mule and Jeepable tracks	9.0
1. Baitadi-Darchula	
2. Darchula-Biyas-Tinker	
3. Charka-Tusharebhot (Dolpa)	
4. Others	
VIII. Construction of Suspension bridge, Bridges and Culverts	49.0
1. Construction of Suspension bridges	30.0
2. Bridges and Culverts	19.0
IX. Roads to be improved	22.5
1. Raxaul-Hetauda	4.0
2. Hetauda-Kathmandu (Tribhuvan Highway)	7.5
3. Kathmandu-Trisuli	6.5
4. Others (Padma road, Biratnagar-Rangeli, etc.)	4.5
X. Miscellaneous	30.2
1. Survey, research and feasibility study	10.0
2. Construction; Machinery purchase and installation; Trucks and Vehicles for construction work; and construction of Central Materials Laboratory	20.2
Total:	813.1

TABLE 82

PHYSICAL TARGET OF ROAD PROJECTS IN THE FOURTH PLAN

(Length in Kilometres)

Project	Total length	Black top	Grave	Fairweather	Total
I. Completion of Current projects (uncompleted activities)	867	477	294	—	777
1. Dhalkewar-Jhapa-Jaleshwor-Janakpur	294	253	—	—	253
2. Simra-Janakpur	117	89	—	—	89
3. Narayangadh-Butwal	122	122	—	—	122
4. Prithvi Highway	176	—	156	—	156
5. Dhangadhi-Dadheldhura	145	—	138	—	138
6. Kathmandu-Bhaktapur	13	13	—	—	13

II. Completion of current projects (sectorwise activities on Mahendra Highway)	520	83	200	237	520
1. Butwal-Banbasa	437	—	200	237	437
2. Road improved on Hetauda-Narayangadh	83	83	—	—	83
III. Growth Axis Road	840	—	229	35	264
1. Nepalgunj-Jumla	250	—	77	—	77
2. Putlikhet-Baglung-Tukuche	280	—	80	—	80
3. Trisuli-Dhunche-Gatlang	150	—	—	35	35
4. Dharan-Dhankuta-Khandbari	160	—	72	—	72
IV. Inter District, Intra District level roads	150	—	150	—	150
1. Gorkha-Prithvi Highway	25	—	25	—	25
2. Choutara-Arniko Highway	26	—	26	—	26
3. Gaur-Mahendra Highway	33	—	33	—	33
4. Krishnanagar-Bahadurgunj-Mahendra Highway	20	—	20	—	20
5. Dang-Mahendra Highway	16	—	16	—	16
6. Chandragadhi-Mahendra Highway	16	—	16	—	16
7. Rajbiraj-Mahendra Highway	14	—	14	—	14
V. Urban Roads	25	25	—	—	25
1. Kathmandu Valley road	15	15	—	—	15
2. Other urban roads	10	10	—	—	10
VI Roads to be constructed after feasibility study	—	—	100	—	100
Total	—	585	973	272	1830

TABLE 93

ESTIMATED ANNUAL ALLOCATION OF EXPENDITURE IN ROAD DEVELOPMENT IN THE FOURTH PLAN

(Rs in Millions)

Project	Total Expdt.	1970-71	1971-72	1972-73	1973-74	1974-75
I. Completion of current Projects■	330.4◆	175.1	98.1	32.2	8.0	—
1. Jhapa-Janakpur-Jaleswor-Janakpur	121.1	90.0	31.1	—	—	—
2. Kamala bridge	8.0	—	—	—	—	—
3. Simra-Janakpur	30.0	6.0	8.0	8.0	8.0	—
4. Narayangadh-Butwal	76.5	32.5	22.0	22.0	—	—
5. Naubise-Pokhara	57.5	32.5	25.0	—	—	—
6. Dhangadhi-Dadheldhura	28.3	14.1	12.0	2.2	—	—
7. Kathmandu-Bhaktapur	9.0	—	—	—	—	—

■ Uncompleted activities.

◆ Rs 17 million allocated for the construction of the Kamala bridge and Kathmandu-Bhaktapur road is not shown in the breakdown.

II. Completion of Current Projects*	203.0	10.8	50.0	50.0	50.0	42.2
1. Butwal-Banbasa	153.0	10.0	30.0	40.0	40.0	33.0
2. Narayani bridge and Hetauda - Narayangadh road improvement	50.0	0.8	20.0	10.0	10.0	9.2
III. Growth Axis Roads	91.8	—	2.0	29.8	30.0	30.0
1. Nepalgunj-Jumla	30.0	—	0.5	9.5	10.0	10.0
2. Putlikhet-Baglung-Tukuche	30.0	—	0.5	9.5	10.0	10.0
3. Trisuli-Dhunche	1.8	—	0.5	1.3	—	—
4. Dharan-Dhankuta-Khandwari	30.0	—	0.5	9.5	10.0	10.0
IV. Development and Improvement of District level Transport	82.5	—	9.0	9.0	9.0	9.0
1. a. Inter- & Intra-district Roads:**	31.0	—	—	—	—	—
b. Foot, mule & Jeepable Track***	9.0	—	—	—	—	—
Total	40.0	4.0	9.0	9.0	9.0	9.0
2. Construction of suspension bridge, bridge and culverts	42.5	7.3	8.5	10.7	8.0	8.0
a. Construction of suspension bridges	30.0	7.0	6.0	6.0	5.5	5.5
b. Bridges and Culverts	12.5	0.3	2.5	4.7	2.5	2.5
V. Urban roads and bridges	22.7	7.2	6.8	4.5	3.2	1.0
1. Kathmandu roads	11.2	4.0	2.0	3.0	2.2	—
2. Other urban roads	5.0	1.0	1.0	1.0	1.0	1.0
3. Kathmandu bridges	6.5	2.2	3.8	0.5	—	—
VI. Main roads to be constructed after feasibility study	30.0	0.5	1.0	9.0	10.0	9.5
1. Lahan-Okhaldhunga						
2. Kathmandu-Simra						
3. Dang-Jajarkot						
4. Jhapa-Taplejung						
5. Banepa-Sindhuli-Dhalkewar						
6. Narayanghat-Prithvi Highway						
7. Bhojpur-Mahendra Highway						
8. Thori-Bharatpur						
9. Others						

*Sectionwise activities on Mahendra Highway.

**Includes (1) Gorkha-Prithvi Highway (2) Chantara-Arniko Highway (3) Gaur-Mahendra Highway & other regional roads.

***Includes Bardiya, Bhojpur, Gulmi, Ilam, Dailekh, Sinduli, Taplegunj, Sankhuwa Sava, Solukhumbhu, Dolakha, Sindhupalchowk, Rasuwa, Dhading, Gorkha, Manang, Mustang, Dolpa. Tribrikokt, Jumla, Mugh, Humla, Bhajhang, Darchula & Baitadi.

VII. Roads to be improved	22.5	7.9	7.4	2.4	2.4	2.4
1. Raxaul-Hetauda	4.0	1.5	2.5	—	—	—
2. Hetauda-Kathmandu	7.5	1.5	1.5	1.5	1.5	1.5
3. Kathmandu-Trisuli	6.5	4.0	2.5	—	—	—
4. Others (Padma road, Biratnagar-Rangeli, etc)	4.5	0.9	0.9	0.9	0.9	0.9
VIII. Miscellaneous	30.2	25.4	3.4	0.5	0.5	0.4
1. Feasibility study	10.0	6.0	2.6	0.5	0.5	0.4
2. Purchasing & Installation of construction materials, trucks, vehicles and Central laboratory and office development etc.	20.2	19.4	0.8	—	—	—

NATIONAL TRANSPORT CORPORATION

The primary aim of this corporation is to play the leading role in traffic operation. Therefore, it has set the following policies:

(a) to carry out its business in a healthy atmosphere emphasising the trade motive;

(b) to operate the vehicles on new highways and other roads by just covering the operating costs; and

(c) to base the means of transport as far as possible on resources available in the country.

In accordance with these policies, the Transport Corporation has included the following projects in the Fourth Plan:

(a) Extension of truck and bus services on Sunouli-Pokhara (Sidhartha) and other highways;

(b) Extension and expansion of railway line (if justified by the feasibility study); and

(c) Operation of Trolly-bus service (if justified by feasibility study)

1. Extension of Truck and Bus services in the Sidhartha (Sunouli-Pokhara) and other highways:

The provision of transport facilities on new completed highways will be a desired goal of the Government, keeping in mind the road network and volume of traffic. This will facilitate the movement of men and materials, as well as reducing transport bottlenecks.

Furthermore, the Transport Corporation will be strengthened and made more efficient, thereby enabling the accessible areas to get the supply of needed materials for construction, industry, etc. in time. This will also bring uniformity in the shipment of goods and restrict the setting of arbitrary rates.

About 125 additional trucks will be made available for service on the roads to be completed during the Fourth Plan period. This will help to strengthen the trucking units, and help to complete construction works in different zones in time.

2. Extension of Railways (If justified by feasibility study)

Railway services are considered to be one of the important means of transport. It has occupied a prominent role in the transporation system of neighbouring countries. In Nepal, it has been possible to operate railway services in only two places because of the high costs of construction and maintenance. The railway service operating between Amlekhgunj and Raxaul (N.G.R.) has virtually closed down since the development of parallel surface road in the area. On the other hand the Janakpur-Jayanagar railway service is operating successfully and has been further extended. In the context of highways expansion, there seems to be little ground for the further development of railways, although necessary surveys will be undertaken to study the expansion of such services to feasible areas. In this regard, the feasibility survey for construction of a broad gauge railway line between Raxaul and Hetauda and Hetauda and Kathmandu will be completed. A feasibility study will also be undertaken for the extension of railway line from Mahinathpur to Chisapani.

3. Operation of Trolly bus (If justified by feasibility study)

This bus is operated with the use of hydro electric power. Since the supply of hydro electric power in the country is increasing and the need for large quantities of diesel and petrol have necessitated dependence upon foreign countries, it might be more economic to develop a transport system based upon the utilization of power. An initial survey will be done about setting up an electric trolly bus service along Kathmandu-Bhaktapur route. This route has a large volume of traffic and a wide road is recently being constructed. Attempts will be made to operate an electric trolly bus service if it is found to be feasible by the study. Similar surveys will be done in other parts of the country if this project is found to be feasible.

4. Financial Outlay:

It is estimated that Rs. 2.6 million will be required for the implementation of the above mentioned projects.

(1) Purchase of addional trucks	Rs. 2.5 million
(2) Survey for railway (Raxaul-Kathmandu) and feasibility sutdy of electric bus service	Rs. 0.1 million
Total	Rs. 2.6 million

TABLE 94

THE ALLOCATION OF OUTLAY FOR THE 125 TRUCKS PURCHASE DURING THE PLAN PERIOD

Fiscal Year	No. of trucks	Estimated cost
1970-71	30	6,00,000
1971-72	25	5,00,000
1972-73	25	5,00,000
1973-74	30	6,00,000
1974-75	25	3,00,000
Total	125	Rs. 25,00,000

CHAPTER XI

CIVIL AVIATION

The importance of civil aviation in providing easy and speedy transportation facilities to the remote and inaccessible areas of Nepal is steadily increasing. It is difficult to provide road transportation facilities in a short period of time to every district in a rugged country like Nepal. Since a long time is often needed (especially in the initial stages of the construction of roads in the hilly terrans), it has become essential to operate air service in these regions before making road facilities available. Efforts will thus be continued during the Fourth Plan period to make available air service in those districts which are considered most essential from the point of view of economic, social, administrative and national development and to eliminate the transport bottlenecks which have been standing as a stumbling-block to the overall development of the country.

There has been encouraging development in the field of civil aviation in the past few years. Air service at the present time is not limited to domestic flights and flights to India. Services are linked to Pakistan, Burma and Thailand, illustrating an encouraging entry of Nepal into international air-service. In this regard, some of the existing airfields will be improved and extended, making the take-off and landing of large jet aircrafts possible. Some other airports will be modernised and rennovated as required and will be provided with communication facilities, aerial navigation instruments and buildings.

Progress in the preceeding Plan period:

Prior to the beginning of the First Plan period, air service was available to only five places in the country. Among these airfields, Kathmandu airport was the only all-weather one. The remaining four were fairweather and not servicable in the monsoon. During the First Plan period, new fair-weather airfields were constructed at seven additional sites: Bharatpur, Dhangadi, Nepalgunj, Dang, Rajbiraj, Janakpur, and Palungtar. Air service was thus made available to a greater extent. By the end of the First Plan period, twelve airfields were constructed at twelve different places in the country. In addition, the Royal Nepal Airlines Corporation (RNAC) was established in the year 1959 to provide regular air service. Improvements were also made on the major airfields of the country: Kathmandu, Bhairahawa and Biratnagar.

In the Second Plan period, the construction of three additional fair-weather airfields was envisaged, but only one in Jhapa was actually constructed. The other one in Surkhet was almost completed. STOL fields were constructed in Jumla, Jiri and Baglung. In addition, the airports of Janakpur and Bhairahawa were largely converted into all-weather ones. Similarly, the improvement of Biratnagar airport and the construction of 2,012 metre-long (6600 ft.) cross runway at Kathmandu were almost completed.

The progress achieved in the first four years of the Third Plan in the field of Civil Aviation was in accordance with the plan targets, except for STOL airstrip construction. The carry-over projects from the Second Plan were also completed during the Third Plan period.

The Tribhuwan Airport (Kathmandu) is being converted into an international airport, and a new 6,600 ft. x 150 ft. long cross runway has been constructed. In addition, a taxiway, apron, car parking area, and terminal building have been constructed. The old terminal building has been expanded and made available to the passengers of external flights. A new and seperate terminal building for internal passengers has been completed. The design and estimates of a fire house and a transmitter receiving station were also completed. During the Plan period Biratnagar, Janakpur and Bhairahawa airports were converted into all-weather ones. Apart from this, efforts were made to provide additional facilities at Simra, Dang, Jhapa, Bharatpur, Dhangadi and other airports.

Expenditure incurred in the development of Aviation:

In the First Plan Rs. 6 million were allocated for various development projects in the field of civil aviation. The actual expenditure during the Plan period, was Rs. 7.071 million. During the Second Plan it was envisaged to spend Rs. 25 million, but the actual expenditure amounted to only Rs. 15.996 million. In the Third Plan, Rs. 70 million was allocated for the development of civil aviation. The expenditure by the fourth year of the Plan was estimated to be Rs. 53.482 million.

The projects incorporated in the Fourth Plan:

Nineteen different projects will be implemented for the development of civil aviation during the Fourth Plan period. These projects deal with the extension and construction of new airports. The existing airfields will also be equipped with communication, navigational aid, and other facilities. To implement these projects, Rs. 161 million has been allocated during the Plan period. In additon, the Asian Development Bank (ADB) will make available a loan of Rs. 60.701 million and technical assistance worth Rs. 3.53 million for development of the airports at Tribhuwan (Kathmandu), Pokhara, Simra, Biratnagar and Bhairahwa.

1. Tribhuwan Airport:

The regular service of large aircrafts like Fokker, Caravelle and DC 9s has already begun at the airport. Since such services are expected to be continued in the future, this airport will be converted into an international airport. The present runway will be expanded to 3,048 metres from the present length of 1,036 metres. In addition, the internal and extern

terminal buildings, the control tower, the cargo terminal, the approach road, the car parking area, the hangar and other buildings will be constructed. In addition, provision will be made for water and the disposal of sewage. This project is estimated to cost Rs. 43.836 million.

2. Pokhara, Simra and Nepalgunj airports:

During the Plan period, new airports will be constructed in Pokhara, Simra and Nepalgunj. The runway of these airports will be 1,524, 2,286 and 1,524 metres (5,000 ft. 7,500 ft. and 5,000 ft.) respectively. New sites will be required for their construction, since the present airfields are not suitable for further extension. In these airport, taxiway, terminal building, staff quaters, workshop communication and fire station buildings feul storage etc. will be constructed.

Pokhara:

After Tribhuwan airport, Pokhara is the second busiest airport in the hilly region of Nepal. Recently, the increase in economic activity and the growing demand for air service to Pokhara has made the operating of planes bigger than DC-3 necessary. It has been planned to construct an airport with a 1,524 metre (5,000 ft.) runway at a suitable site. It is estimated that Rs. 24.087 million will be spent during this Plan period for the various works to be undertaken for the developmen of Pokhara ariport.

Simra:

Simra airport is the nearest to Kathmandu and has thus become essential to construct it as an alternative to Tribhuwan Airport. In case the jet aircraft cannot land at Tribhuwan airport, this airport will be used as the alternative landing site. The cost of the major construction work to be undertaken at this airport is estimated to be Rs. 29.7825 million during the Fourth plan period.

Nepalgunj:

Nepalgunj occupies an important place in the development of far western Nepal. It is not only the main centre for importing and exporting in this area, but also the transportation centre for the extenison of different development projects. Moreover, it is centrally located between Dhangadi in the west, Surkhet in the north and Dang in the east and acts as an operating base for STOL service in that region. For these reasons, this airport needs reconstruction and modernization to make it an all-weather one. It is estimated that Rs. 16.045 million will be spent for this purpose.

3. All-weather airport at Biratnagar and Bhairahawa:

The runways in Biratnagar and Bhairahawa airports will be extended to 1,524 metre (5,000 ft.). The approach roads and terminal buildings will also be renovated. These projects are estimated to cost about Rs. 29.5-125 million. During this Plan period Rs. 14.756 million will be spent for each airport.

4. Tumlingtar Fairweather airport:

The construction of a 3,300 ft. runway at Tumlingtar airport was begun during the Third Plan period in hopes of providing Dacota (DC-3) air-

service to the Eastern hilly region of Nepal. The completion of this airport is envisaged during the Fourth Plan period. For this purpose, about Rs. 2,60,000 will be spent in the Plan period. This airport will provide additional transport facilities to the inaccessible areas of Mechi, Kosi and Sagarmatha Zones.

5. Improvements and additional facilities:

In addition to the above mentioned airports, airfields at Janakpur, Rajbiraj, Jhapa, Plaungtar, Bharatpur, Dang, Dhangadi and Surkhet will be modernised and equipped with staff-quarters, fire-stations, N.D.B., and generator building, etc. All these improvement would make the take-off and landing of aeroplanes of higher capacity possible. The implementation of this calls for Rs. 3,271,525 which includes Rs. 775,000 for Janakpur, Rs. 465,000 for Rajbiraj, Rs. 911,525 for Jhapa, Rs. 80,000 for Palungtar, Rs. 140,000 for Bharatpur, Rs. 130,000 for Dang, Rs. 340.000 for Dhangadhi and Rs. 430,000 for Surkhet airfield.

6. Short take-off and landing (STOL) airstrips:

STOL air services play an important role in the provision of transportation facilities to Nepal's inaccessible hilly regions, where big aircrafts cannot land. At present, there are 24 such STOL air fields in the Kingdom. The three airstrips at Jumla, Balgung, and Lamidanda of Khotang have been constructed by the Department, and two other airstrips at Dipayal in Doti and Safebagar in Achham, are now being renovated by the Department. In addition, 19 other airstrips constructed by voluntary labour from the local people are now under regulations of the Department. These include: (1) Mahendra Nagar, (2) Soltar in Kailali, (3) Tikapur, (4) Ghorahi, (5) Dhorpatan, (6) Jomsom (7) Rampur, (8) Hetauda, (9) Goltar in Ramechap, (10) Jiri, (11) Ranibas in Dhanukha, (12) Chisapani in Dhanukha (13) Hardi-Nath in Dhanukha, (14) Kurula in Udaipur, (15) Amtai in Sirha (16) Rumjatar, (17) Lukla, (18) Kampughat and (19) Handiya. In the Fourth Plan 10 additional airstrips will be constructed in Baitadi, Bajhang, Humla, Dailekh, Dolpa, Tibrikot, Bajura, Rukum, Jomsom and one district in Mechi zone. Jomsom in Mustang, has its own airstrip which simply needs renovation. This project are estimated to cost Rs. 5,520,000. Airstrips will be constructed only on those sites which are found by surveys to be feasible.

During the Second Plan, it was planned to construct 20 STOL airstrips but the construction of only four such strips was completed. The target of the Third Plan for the construction of STOL airstrips was also revised, and the number of airstrips to be constructed was reduced from 20 to 11. The progress achieved so far in this field is not encouraging. Therefore, the target in the Fourth Plan has not been overly ambitious so that it can be totally achieved.

7. Provision of communication and navigational aid:

The provision of communication and navigational aid will be undertaken in this Plan period in order to make air service more secure and efficient. Such facilities have already been provided in Kathmandu and seven other places. However, the other airfields still need them. The airfields

that have already been given navigational aids are not fully equipped at present. These airfields will be provided with the necessary communication and other materials. This project is estimated to cost Rs. 6.9 million.

8. Administrative building:

The need for an administrative building for the Department has been felt for a long time. Construction of it is planned during the Fourth Plan period, and it is estimated to cost Rs. 400,000.

9. Other Arrangements:

Arrangements for the provision of necessary furniture, means of transport, and other machines and equipments for maintenance will also be made at different airports. For this purpose a sum of Rs. 1,386,475 (including Rs. 250, 000 for furniture, Rs. 400,000 for means of transport and Rs. 736,475 for the maintenance of equipment) has been earmarked in the Fourth Plan.

10. Manpower:

To implement the above projects, an addition of 271 individuals will be required.

TABLE 95

AIRPORTS TO BE IMPROVED DURING THE FOURTH PLAN

	Project	Type	length of run way	
			Metre	Feet
1.	Tribhuwan Airport	All—weather	3,048	10,000
2.	Simra Airport	All—weather	2,286	7,500
3.	Pokhara Airport	All—weather	1,524	5,000
4.	Bhairahawa Airport	All—weather	1,524	5,000
5.	Biratnagar Airport	All—weather	1,524	5,000
6.	Nepalgunj Airport	All—weather	1,524	5,000
7.	Janakpur Airport	All—weather	1,006	3,300
8.	Rajbiraj Airport	Fairweather	1,006	3,300
9.	Jhapa Airport	Fairweather	1,006	3,300
10.	Palungtar Airport	Fairweather	1,006	3,300
11.	Bharatpur Airport	Fairweather	1,006	3,300
12.	Dang Tulsipur Airport	Fairweather	1,006	3,300
13.	Surkhet Airport	Fairweather	1,006	3,300
14.	Dhangadhi Airport	Fairweather	1,006	3,300
15.	Tumlingtar Airport	Fair weather	1,006	3,300
16.	STOLS	Fair weather	—	—

TABLE 96

EXPENDITURE IN CURRED DURING PAST THREE PLAN PERIODS FOR THE DEVELOPMENT OF AIR SERVICE

(Rs in Thousand)

	Estimated	Actual	Percent
First Plan (1956-61)	60,00	70,71	118
Second Plan (1962-65)	2,50,00	2,28,00	91
Third Plan (1965-70)	7,00,00	18,13*	—

* of four years only.

TABLE 97

EXPENDITURE INCURRED FOR THE DEVELOPMENT OF AVIATION DURING THE THIRD PLAN

(Rs in Thousand)

Fiscal Year	Budget Amount	Expended	Remarks
1965—66	1,19,13	1,05,77	—
1966—67	49,53	30,06	—
1967—68	14,14	15,28	—
1968—69	58,73	29,93	Revised
1969—70	3,53,79	2,78,30	Estimated
Total	5,95,32	4,59,34	

TABLE 98

ESTIMATED EXPENDITURE FOR THE DEVELOPMENT OF AIR TRANSPORTATION DURING THE FOURTH PLAN

Joint projects to be financed by HMG and the Asian Development Bank (ADB)

Prorect	To be provided by ADB as loan	To be borne by HMG	Other Expenses on the project	Estimated total Expenditure
1. Tribhuwan Airport	2,46,20,000	1,82,15,000	10,00,000	4,38,35,000
2. Simra Airport	1,40,50,000	1,52,12,500	5,20,000	2,97,82,500
3. Pokhara Airport	1,12,80,000	1,21,87,000	6,20,000	2,40,87,000
4. Bhairahawa Airport	1,70,25,000	76,06,250	1,25,000	1,47,56,250

5. Biratnagar Airport	70,25,000	76,06,250	1,25,000	1,47,56,250
6. Janakpur Airport	—	6,40,000	1,35,000	7,75,000
7. Jhapa Airport	—	6,40,000	2,71,525	9,11,525
8. Rajbiraj Airport	—	3,20,000	1,45,000	7,85,000
9. STOLS	—	54,00,000	1,20,000	55,20,000
10. Nepalgunj Airport	—	3,20,000	1,57,25,000	1,60,45,000
11. Tumlingtar Airport	—	—	2,60,000	2,60,000
12. Bharatpur Airport	—	—	1,40,000	1,40,000
13. Dang Airport	—	—	1,30,000	1,30,000
14. Dhangadhi Airport	—	—	3,40,000	3,40,000
15. Palungtar Airport	—	—	80,000	80,000
16. Surkhet Airport	—	—	4,30,000	4,30,000
17. Communication and other arrangement	—	—	69,00,000	69,00,000
18. Administrative Building	—	—	4,00,000	4,00,000
19. Capital (non-recurring) equipments on item 10 as per Budjet	—	—	13,86,475	13,86,475
Transportation means		4,00,000		
Repair and Maintenance		7,36,475		
Furniture		2,50,000		
Total	6,40,00,000	6,81,47,000	2,88,53,000	16,10,00,000

TABLE 99 (A)

ANNUAL EXPENDITURE FOR THE AVIATION DEVELOPMENT DURING THE FOURTH PLAN (1970-75)

(In Rupees)

Project	Projects to be financed seperately by HMG	1970-71	1971-72	1972-73	1973-74	1974-75
1. Tribhuvan Airport	10,00,000	10,00,000	—	—	—	—
2. Simra Airport	5,20,000	—	5,20,000	—	—	—
3. Pokhara Airport	6,20,000	—	6,20,000	—	—	—
4. Bhairhawa Airport	1,25,000	1,25,000	—	—	—	—

5. Biratnagar Airport	1,25,000	1,25,000	—	—	—	—
6. Bhadrapur Airport	2,71,525	1,41,525	—	—	1,30,000	—
7. Janakpur Airport	1,35,000	1,35,000	—	—	—	—
8. Rajbiraj Airport	1,45,000	1,45,000	—	—	—	—
9. STOLS	1,20,000	1,20,000	—	—	—	—
10. Nepalgunj Airport	1,57,25,000	20,000	18,40,000	36,75,000	51,65,000	50,25,000
11. Tumlingtar Airport	2,60,000	2,60,000	—	—	—	—
12. Bharatpur	1,40,000	1,15,000	25,000	—	—	—
13. Dang Airport	1,30,000	1,00,000	—	30,000	—	—
14. Dhangadhi Airport	3,40,000	—	1,15,000	—	2,00,000	25,000
15. Palungtar Airport	80,000	—	—	—	50,000	30,000
16. Surkhet Airport	4,30,000	2,25,000	1,75,000	—	—	30,000
17. Communication material	69,00,000	21,70,000	18,70,000	14,45,000	11,20,000	2,95,000
18. Administrative Building	4,00,000	4,00,000	—	—	—	—
19. Capital Equipments on item 10 of the budjet	13,86,475	6,95,000	4,35,000	1,91,475	35,000	30,000
Total	2,88,53,000	57,76,525	56,00,000	53,41,475	67,00,000	54,35,000

TABLE 99 (B)

(Rs in Thousand)

Project	A.D.B.	H.M.G.	Total	1970-71	1971-72	1972-73	1973-74	1974-75
1. Tribhuwan Airport	2,46,20	1,82,15	4,28,35	1,28,35	1,00,00	1,00,00	1,00,00	—
2. Simra Airport	1,40,50	1,52,12	2,92,62	1,21,65	60,00	60,00	59,75	—
3. Pokhara Airport	1,12,80	1,21,87	2,34,67	85,00	50,00	50,00	49,67	—
4. Bhairhawa Airport	70,25	76,06	1,46,31	50,00	35,00	35,00	26,31	—

5. Biratnagar Airport	70,25	76,06	1,46,31	31,00	40,00	40,00	35,31	—
6. Bhadrapur Airport	—	6,40	6,40	4,50	1,90	—	—	—
7. Janakpur Airport	—	6,40	6,40	6,40	—	—	—	—
8. Rajbiraj Airport	—	3,20	3,20	3,20	—	—	—	—
9. STOLS	—	54,00	54,00	10,80	10,80	10,80	10,80	10,80
10. Nepalgunj Airport	—	3,20	3,20	3,20	—	—	—	—
Total	6,40,00	6,81,47	13,21,47	4,44,10	2,97,70	2,95,80	2,73,07	10,80
Total of Table A			2,88,43	57,76	56,00	53,41	67,00	54,35
Grand Total (A + B)			16,10,00	5,01,86	3,53,70	3,49,21	3,40,07	65,15

N. B. Appointment of Consultants for these Projects are in the process. There might be changes in these figures after the appointment of the consultants.

TABLE 99 (C)

DEVELOPMENT OF AIRFIELDS DURING VARIOUS PLAN PERIOD

Projects	Achievements prior to First Plan	Achievements of First Plan	Achievements of Second Plan	Achievements of Third Plan	Total
1. All-weather airfield	1-Kathmandu	—	—	3-Biratnagar, Janakpur Bairhawa. In addition, the runway at Tribhuban Airport has been extended to 6,600 ft.	4
2. Fair weather airfield	4-Pokhara Bairhawa Simra Biratnager	7-Bharatpur Dhangadhi Nepalgunj Dang Rajbiraj Janakpur Palungtar	1-Jhapa	3-Surkhet Meghauli Tumlingtar (Under Construction)	11
3. STOLS	—	—	3-Jumla Baglung Jiri	3-Khotaag Doti Achham (Improvement activities going on)	5

TABLE 99 (D)

TARGETS OF THE AVIATION DEVELOPMENT IN THE FOURTH PLAN

Project	Position As of the 1969-70		Targets of the Fourth Plan		Expected Position of 1974-75	
	No.	Location	No.	Location	No.	Location
1. All weather airfield:	4—	Kathmandu, Janakpur Bhairahawa & Biratnagar	3—	Simara, Pokhara & Nepalgunj. Also, run-way length will be increased in all airports.	7—	Kathmandu, Biratnagar, Simara, Bhairahawa, Pokhara, Janakpur & Nepalgunj.
2. Fair weather airfield:	11—	Simra, Pokhara, Nepalgunj Bharatpur, Dang, Surkhet, Dhangadhi, Rajbiraj, Palungtar, Jhapa & Meghauli.	1—	Tumlingtar	9—	Dang, Surkhet, Dhangadhi, Rajbiraj, Palungtar, Meghuli, Tumbingtar. Bhadrapur, Bharatpur.
3. STOL airfield :	5—	Jhapa, Baglung, Jiri, Lamidanda of Khotang, Dipial of Doti.	10—	Baitadi, Baglung. Humla, Dailekh, Dolpa, Tibrikot, Bajura, Rukum, Jomsom. one place in Mechi Zone.	15—	

THE ROYAL NEPAL AIRLINES CORPORATION (R.N.A.C.)

Air service is considered a necessity in every country. Therefore, His Majesty's Government has given due priority to air services and has been taking the necessary steps in acquiring aircrafts as well as constructing airports. Recently an agreement was reached between His Majesty's Government and the Asian Development Bank (ADB) for the development of civil aviation. The agreement involves projects requiring Rs. 130 million. Realizing the importance of civil aviation, His Majesty's Government has made a programme for spending more than 160 million in the Fourth Plan period.

The Royal Nepal Airlines Corporation has provided air transport to the remote areas of the country. Although some of the difficult areas have become accessible due to road construction during the last decade, air service is still important as a time-saver. Since people have benefitted by air service (as well as been attracted by it), the Royal Nepal Airlines Corporation has made a goal to operate additional regular service to the greatest extent possible by further extending its internal service to many difficult areas during the Fourth Plan period.

To give essential support to the increasing tourist industry of the country, to strengthen individuality, and to continue mutual co-operation in the international field, there is a great need to improve and extend the external service of the Royal Nepal Airlines Corporation. This will contribute especially to the earning of foreign exchange.

In view of these facts, the Royal Nepal Airlines Corporation has envisaged a plan to implement the following projects during the Fourth Plan period.

(a) Purchase of medium size Jet planes.

(b) Purchase of STOL aircrafts.

(c) Construction and Maintenance of workshop and simulator and purchase of passanger buses.

(d) At present only DC-3 planes are being used in the internal service. In Fourth Plan period, planes like the Avro 748 will be introduced for internal services, as well.

(e) The existing external services to Patna, Delhi and Dacca will be continued and will be extended to other new places after purchasing some medium size jet planes.

(f) Purchase of some STOL planes and start regular STOL air service to hilly and Himalayan regions like Lamidanda, Rumjatar, Lukla, Namchebazar, Doti, Jumla, Surkhet, Saphebagar (Achham), Jiri, Baglung and such other places.

(g) At present, there is only one workship for DC-3 plane. In addition a propellar overhaul shop, a general workshop, an electric overhaul shop, and an instrumental overhaul shop will be established. There is programme to purchase two big buses to provide transport facility to pilots and the passangers. Also, spare parts required for the above mentioned planes will be purchased. An agreement on a loan between His Majesty's Government and the Asian Development Bank has been reached.

Financial Outlay:

The Royal Nepal Airlines Corporation will invest Rs. 123 million to execute the above programme during the Fourth Plan period. The total outlay will be spent as follows:

(a) Purchase of Additional Aircrafts (one medium size jet, three STOL planes and spare parts)	Rs.	1,00,000,000
(b) Pilot Training Simulator	,,	2,000,000
(c) Workshop Equipment Tools	,,	10,000,000
(d) Ground Landing Euipment	,,	500,000
(e) External Power Unit	,,	300,000
(f) Inter-Cum-Equipment	,,	250,000
(g) Surface Transport: Ten buses and five cars	,,	1,300,000
(h) Other construction in the Central Building		2,000,000
(i) Branch Office Building		1,500,000
(j) Training for Pilot and Engineers		2,500,000
(k) Investigation for purchase of planes		100,000
(l) Working Capital		2,500,000
Total	Rs.	123,000,000

Source of Finance

The sources of finance for the execution of the above total programmes are as given below:

(a) Compensation of AF-27 and sale of DC-3 plane	45,000,000
(b) Loans from the Asian Development Bank	3,350,000
(c) His Maesty's Government's Share Capital	10,000,000
(d) Loans from other sources	64,650,000
Total	Rs. 123,000,000

All the above mentioned programmes for the development of air transportation are related to each other. Therefore, the programmes of both the Department of Civil Aviation and the Royal Nepal Airlines Corporation need to be implemented in order to achieve the target of the Plan. It is evident that if the target of one were to remain unfulfilled, it would be difficult to meet the target of other.

Therefore, attempts will be made to implement the projects by coordinating the efforts of the two agencies. Though the Royal Nepal Airlines Corporation is an autonomous organization, His Majesty's Government has given due consideration to its importance and has given it necessary protection and aid many times. This tradition will be continued during this Plan period as well.

Although only Rs. 100 million will be spent by His Majesty's Government during the Plan period, the willingness shown by His Majesty's Government in making additional amounts available to the Royal Nepal Airlines Corporation and to the provision of assistance and facilities of other kinds have proven to be of great support and will remain so in the future.

CHAPTER XII
TELECOMMUNICATION

1. Telecommunication service was first started in Nepal in the year 1913. Telephone service between Kathmandu and Raxaul, extending for a length of 110 Km. was established in 1914. Telephone lines, extending for a length of 518 Km. between Kathmandu and Dhankuta were installed in the year 1936. In addition, a 240 Km. telephone line was installed linking Palpa and Kathmandu in 1951. Similarly, 25 automatic telephone lines were also installed in Kathmandu in the year 1935.

Another chapter in the development of telecommunication service in Nepal extends from 1951 to 1956. An additional telephone line was established in 1953 linking Palpa with Bhairahawa. In the same manner, a 29 Km. long telephone line was installed from Kathmandu to Dhulikhel. A Central Battery (C. B.) telephone exchange was established in Kathmandu in the year 1950 and telephone service was made available to the general public. Further extension of telephone lines to a capacity of 300 was completed in 1957.

Wireless service in Nepal was started in 1950. At that time, the service was limited to Kathmandu, Nepalgunj, Bhairahawa, Illam, Dhankuta and Biratnagar. This service was further extended to Doti, Dang, Jumla, Dailekh, Sallyan, Okhaldhunga, and Rajbiraj in the year 1952 and to Jaleshwar, Ramechhap, Bandipur, Terathum, Taplejung, Dandeldhura and Baitadi at a later date. Three more such stations were set-up in Baglung, Palpa and Dhangadhi in the same year. Similarly, new stations were added in Pokhara, Bhojpur and Birgunj.

Formerly, telecommunication services were under the Department of Communications, which also had the responsibility of looking after the postal services of the country. The national development of telecommunication services in a planned, co-ordinated, and controlled way was started after 1959 when the Department of Telecommunication was established.

Present Position

2. With the implementation of the First Plan, new turns in the development of telecommunication service had taken place, not only to meet the needs of administration and security but also to develop different facilities for education, industry, trade and the general public. Accordingly, an automatic telephone exchange system with a capacity of 3,000 lines was installed

in Kathmandu. So far, 1,120 lines, including 120 lines in Singha Durbar have been installed.

3. In the Second Plan period, the construction of different wireless stations started in the First Plan was completed, replacing the 28 existing stations which were out of order by that time. In addition, 50 satellite stations in different districts and 7 area control stations in Kathmandu, Jaleswor, Biratnagar, Pokhara, Bhairahawa, Nepalgunj and Dhangadhi were also installed. An International Telecommunication service was started with the establishment of two circuit to Calcutta and Delhi in India. Also, two teleprinters were installed to exchange message as quickly as possible.

In the field of telephone services, a telephone exchange was established in Bhaktapur. In Kathmandu, 12 local centres were set up for the use of the general public. The establishment of telecommunication stations between India and Nepal was also completed. Within this period, major work regarding the establishment of telecommunication service between Nepal and Pakistan was also completed.

4. In the Third Plan period, since the existing exchange of 100 lines telephone service proved very insufficient in meeting the demand, an additional 4,000 lines in Kathmandu city and 600 lines in Lalitpur (Patan) were installed. In Biratnagar, the total capacity of the telephone lines was increased to 400 with the installation of an additional 100 lines. The establishment of the Kathmandu-Raxaul Trunk Line was also completed as scheduled. In the Birgunj automatic telephone project, estimates on the installation of internal and external equipment were completed, together with 30 per cent of the construction work on the main building. The Kathmandu-Calcutta wireless project has been completed ahead of the schedule and the services have been operated on an experimental basis with the installation of all necessary equipment. By the fourth year of the Plan, wireless stations have been installed in five more districts. By the end of the Third Plan, wireless services have been made available in about all of the 14 zones and 75 districts. The annual achievements of the Plan in accordance with the targets are given below.

TABLE 100

PHYSICAL TARGET AND ANNUAL PROGRESS OF THE THIRD PLAN

Name of the Projects	Target	1965-66	1966-67	1967-68	1968-69	1969-70*
1. Wireless	23	—	—	12	—	—
2. Kathmandu Telephone	—	—	372	128	437	849
3. Biratnagar CB Telephone	400	300	—	—	100	—
4. East West Macrowave Survey	—	Work		Being	Done	—
5. Kathmandu-Raxaul Trunk Line	—	—	—	—	—	Completion of construction works
6. Birgunj Telephone Exchange	—	—	—	—	—	50 per cent completed.

*Upto March—April 1970

Programmes and Targets of the Fourth Plan

The various objectives fixed to implement different projects in the field of Telecommunication are as follows:

(a) As the establishment of telecommunication services has already been completed in 75 districts, stress will be given to strengthening the existing wireless stations, rather than in establishing new stations.

(b) Communication service will be established and extended in different cities as necessary.

In accordance with the above objectives the following projects are included.

Project	Target
(a) Kathmandu Teleprinter service	To be completed
(b) Establishment of Telecommunication training centre	To be completed
(c) Telecommunication services between Bhairahawa and Gorkhapur and in between Nepalgunj-Lucknow	To be completed
(d) Local Telephone Exchange Service:	Establishment of automatic telephone exchange
1. Kathmandu	5,000 lines to be added
2. Bhaktapur	200 lines to be installed
3. Hetauda.	100 non-automatic lines to be installed
4. Malangwa	50 non-automatic lines to be installed
5. Janakpur	200 non-automatic lines to be installed
6. Rajbiraj	100 non-automatic lines to be installed
7. Dharan	400 non-automatic lines to be installed
8. Biratnagar	2,500 automatic lines to be installed
9. Jhapa	100 non-automatic lines to be installed
10. Pokhara	1,500 non-automatic lines to be installed
11. Nepalgunj	200 non-automatic lines to be installed
12. Bhairahawa	100 automatic lines to be installed
14. Patan	400 automatic line to be installed
(e) Establishment of Kathmandu-Nepalgunj Wireless	To be completed
(f) Kathmandu-Bhaktapur Carrier	To be completed
(g) East-West Microwave	To be completed

(h) Kathmandu-Raxaul Trunk Telephone line — Establishment of Eight channel
(i) Birgunj automatic Telephone Exchange — Establishment of 3000 lines

The target of annual programme of the above mentioned projects will be as follows:

TABLE 101

ANNUAL PROGRAMME OF THE TELECOMMUNICATION DURING THE FOURTH PLAN

Name of the Projects	1970-71	1971-72	1972-73	1973-74	1974-75
1. Kathmandu Telex	—	Prilimi-nary work, site selection, building construc-tion, design	Design estimate order placement of goods	Fitting works	—
2. Bhairahawa—Gorakhpur & Nepalgunj—Lucknow Telephone service	—	—	—	Sites ele-ction, bui-lding con-trucion, design & order.	Fitting works.
3. Local Telephone exchange: (a) Kathmandu	—	—	Site selection, building construc-tion, or-der pla-cement.	Design estimate, order placement & fitting.	Estima-tion order for pro-jects execu-tion
(b) Patan (Lalitpur)	—	—	do	do	—
(c) Bhaktapur	—	Building construc-tion, design estimate.	Order placement of goods.	Fitting works.	—
(d) Hetauda	site sele-ction, bui-lding con-struction.	Order for goods & design estimate.	Fitting works	—	—
(e) Malangwa	—	Site se-lection, building	—	—	—

		construction, order for design estimate.			
(f) Janakpur	Building construction, design, estimate.	do	do	—	—
(g) Rajbiraj	—	Building construction, design estimate.	Order for cost estimate.	Fitting works.	—
(h) Dharan	Site selection, building construction.	Order for goods	Order for goods & fitting.	Fitting Works.	—
(i) Biratnagar	do	do	do	do	—
(j) Jhapa	do	do	do	do	—
(k) Pokhara	—	Land acquisition for building construction.	Order for goods	Fitting works	—
(l) Bhairahawa	—	Design estimate, building construction.	do	—	—
(m) Nepalgunj	Land acquistion, building construction.	Order for design estimate.	Fititng works	—	—
4. Kathmandu-Nepalgunj Wireless services	Order for goods.	Fitting works.	Fitting works	Completion of Fitting works	—

5. Kathmandu-Bhaktapur carrier	Order for goods.	Order place	"	—	—
6. Microwave	Land acquisition, building construction.	Design estimate, building construction.	Order for goods	Complete for fitting works & in service	service available

5.1. Kathmandu Teleprinter:

The teleprinter service became necessary with increases in the volume of trade, the development of tourism, increases in the air service, and hotel accommodations. Compared to wireless services, the followings are the additional facilities that are made available by teleprinter services:

(1) The exchange of more time during conversation,
(2) conversations which take place remain in the printed form,
(3) communication of messages is possible in the absence of the other party,
(4) Conversations which take place remain secret.

The cost of establishing, maintaining, and reparing the Telex system is higher than the wireless system. However, this system is used mostly by individuals or institutions connected with trade and industry, and the service is highly beneficial to such individuals or institutions.

In Kathmandu, an International Telex System with 100 lines capacity (which can be increased to 300 if necessary) will be established to cater to the increasing needs for trade, hotel services, tourism, industry etc. This form of communication service will help to directly increase the revenue of His Majesty's Government by helping in the expansion of trade and industry.

5.2. Tele-Communication Training Centre:

In Nepal, Tele-communication service has been expanding at an increasing rate in the last eight years. The local exchange lines have increased from 300 lines to 5,400 lines, and the number of wireless stations has gone up from 26 to 70. International services have been established as well. The telecommunication services will definitely be expanding at an increasing pace in the future. Therefore, it is obvious that many trained people are needed to implement new projects and to continue the services smoothly. At present, the number of trained people is very limited, compared to the expansion of this service. Naturally it is not possible to implement any new projects effectively or to run the existing services effectively.

At present, there is no institute to provide training or study courses in the field of telecommunication, nor is here any programme to establish one in the future. The problem is to establish a training centre in accordance with the needs of the Department. Training facilities will be provided in different fields according to needs. The duration of the training course will be two to three years. Training will be provided to thirty persons annually. Necessary funds, in the form of assistance, will be made available for this purpose from the United Nations Special Fund. This will include the service of technical experts and equipment. The local expenses, on the other hand

will be borne by His Majesty's Government. Arrangements for training regarding telephone services will be made as a part of the present Engineering Institute. This will reduce the administrative expenses of setting up a separate training centre and will enable the Institute to run at full capacity.

5. 3. Bhairahawa-Gorakhapur and Lucknow-Nepalgunj wireless service:

Except Tribikot Wireless services have been established in all districts of Nepal. But, international wireless service and the telex service are conducted only through Kathmandu. This has put an excessive pressure upon Kathmandu and it has not been possible to make International Telecommunication service as prompt as in other countries. Because of rising demand, the problem will become more acute. The only solution is to make international communication services available in the Eastern and Western parts of the country through the construction of an East-West microwave system. At present, there should be direct linkage between Biratnagar and Calcutta in the East and Nepalgunj and Lucknow in the West. In order to achieve this, it is necessary to conclude necessary arrangements between Nepal and India, and necessary arrangement should be made for the construction and the establishment of telecommunication offices at Bhairahawa and Nepalgunj. With the completion of the project, it would be very convenient to quickly exchange conversations and promptly deliver messages. It would also help to generate excess revenue to the Government. Naturally, it will help the Government in its efforts to increase revenue.

5.4. Local Telephone Exchange:

In accordance with the need to establish telephone exchange projects in different zones and districts in order to meet the need of increasing trade and transaction and expanding industrialisation, it has been planned to install local telephone exchanges at 13 places: Kathmandu, Lalitpur (Patan), Bhaktapur, Hetauda, Bhairahawa, Janakpur, Rajbiraj, Dharan, Biratnagar, Jhapa, Pokhara, Malangawa, and Nepalgunj. Out of this, there is a programme to install three exchange projects within Kathmandu Valley, one in the inner Terai, six in the Eastern Terai, two in the Western Terai, and one in the hilly region.

Kathmandu:

5,600 telephone lines (including 600 in Patan) have been installed by the end of the Third Plan. However, it became necessary to install 5,300 additional telephone lines within a decade. The main reason behind this is the increasing volume of trade and transactions, the activity in social and other setcors, and in the adminstrative matters of being the capital of the country. In view of growing number of transactions and the increasing demand for telephone lines, 5,000 additional automatic telephone lines will be installed in the Plan period. It will help i nthe expasion of trade and industry and indirectly increasing Government revenue. It will also provide a facility of the modern era to the general public.

Lalitpur (Patan):

Because Lalitpur is one of the three main cities of the Kathmandu Valley, the 600 telephone lines installed at present are not sufficient to meet the increasing demand. Therefore, 400 additional lines will be installed in the Plan period.

Bhaktapur:

Bhaktapur, is one of the other important cities of Kathmandu Valley and is located 13 kilometres away from the city of Kathmandu. In spite of its importance as a commercial city, it has not yet been provided with telephone facilities. Therefore, telephone lines will be distributed after the installation of one telephone exchange with the capacity of 200 lines.

Hetauda:

Hetauda is one of the main industrial centres of Narayani Zone. It has been felt that local telephone and trunk telephone line facilities should be made avai able at this town, if possible A manual telephone exchange project with a capacity of 100 lines will be implemented to meet the growing needs of trade and industry in this area.

Malangwa:

Since a microwave communication system will pass through this area, to make available telephone and trunk telephone service, telephone exchange is essential to establish. A capacity of 50 lines telephone exchange will be installed during the Plan period on the basis of population, industry and commercial development

Janakpur:

Because of a growing population, an increasing number of trade, transactions, and industrial development in the area, it has become necessary to establish a telephone exchange project. As the proposed micro wave system will pass through Janakpur, a telephone exchange project with the capacity of 200 line will be installed during this Plan period.

Rajbiraj:

Rajbiraj is also one of the centres through which the proposed East-West microwave system passes, therefore, it has become necessary to install a telephone exchange with respect to population and the volume of trade in this region. It is, therefore, planned to establish a manual telephone exchange station with the capacity of one hundred lines.

Dharan:

Dharan has its own importance from the point of view of its trade, social and industrial development. As such, it is necessary to install 400 lnes to meet the existing demand. Thus, an automatic telephone exchange project with a capacity to supply 1,000 lines in he future will be installed during the Plan period.

Biratnagar:

Although a C.B. telephone exchange with a capacity of 400 lines has already been installed, the present capacity has not been sufficient to meet the growing demand caused by the increasing population, trade and indus-

tries in this city. Therefore, an automatic telephone exchange with the capacity to distribute up to 5,000 lines, as required, will be installed in the near future. At the initial stage, it will supply 2500 lines only.

Jhapa:

Taking into occount the volume of trade and industrial expansion, it can be considered to be one of the important centres of the country. In addition, as the East-West Microwave will pass through the city, it is necessary to establish telephone exchange station. Therefore, a manual telephone exchange station with the capacity of 100 lines will be installed during the Plan period.

Pokhara:

Besides being an unique tourist spot, its importance has been further increased by the construction of the Sidhartha and the Prithvi Highways which have brought rapid social and economic change, Thus the target of the Fourth Plan is to install a manual telephone exchange station with a capacity of 150 lines.

Nepalgunj:

Nepalgunj is an important commercial and industrial centre in Western Nepal. To meet local requirements one manual telephone exchange station with a capacity of 200 telephone lines will be established.

Bhairahawa:

Bhairahawa is one of the important commercial centres in Mid-Western Nepal. A telephone exchange with a capacity of 100 telephone lines will be established during the Plan period.

5.5 Kathmandu-Nepalgunj Wireless Station

The target of the Fourth Plan is to operate trunk telephone lines in order to make direct conversation between Kathmandu and Nepalgunj possible. It will help increase Government revenues, provide facilities for commerce and industry, and reduce some social inconveniences.

5.6. Kathmandu- Bhaktapur Carrier Service:

Considering the growing population and the increasing trade of Bhaktapur city, another of the important centres in Kathmandu Valley, it is now necessary to join the Bhaktapur exchange with that of Kathmandu. Therefore, a necessary trunk line will be installed to link the Bhanktapur telephone exchange project with Kathmandu. This will help increase the Government revenue.

5.7. East - West Microwave:

Since the existing telecommunication line has proven insufficient to meet increasing demand, it has been deemed necessary to install a modern trunk telephone line. Accordingly, this project is formulated to install a micro wave system which will help to link important centres within the country and also make it possible to establish direct contact with the outside world. Its speciality is the establishment of a system which makes quick delivery of messages and conversations between different parties simultane-

ously without any wire connections. With the installation of this project, as in the case of trunk telephone lines, it will help to overcome the deficiencies of the present wireless system in which conversation is possible only between two persons. It will have 120 channels initially, although necessary equipment will be installed to enable its capacities to be increased to 600 channels.

In the Fourh Plan, a microwave system will be installed at Kathmandu, Birgunj, Janakpur, Rajbiraj, Biratnagar, Dharan, Jhapa, Pokhara and Bhairahawa. The installation of a high level microwave system will help to increase the flow of communication and also to increase Government revenue directly. In the coming five year period, a 100 per cent increase in revenue from the communication service is expected.

5.8. Kathmandu - Raxual Trunk Telephone System and Birgunj Telephone Exchange:

The target is to establish a trunk telephone line between Kathmandu and Raxual and to install 1,000 automatic telephone lines in Birgunj. It is estimated that the total outlay required for the implementation of the bove projects will be Rs. 36.75 million.

TABLE 102

PHYSICAL AND FINANCIAL TARGET OF THE TELECOMMUNICATION DEVELOPMENT IN THE FOURTH PLAN

(Rs. in Thousand)

Name of the project	Target	Expenditure
1. Kathmandu Telex	Establishment	11,85
2. Bhairahawa-Gorakhpur & Nepalgunj–Lucknow Telecommunication service	Establishment	4,00
3. Local Telephone Exchange:		
(a) Kathmandu	Installation and Distribution of 5,000 lines	1,06,00
(b) Lalitpur (Patan)	Addition of 400 lines to make total distribution of 1000 lines	11,20
(c) Bhaktapur	Installation and distribution of 200 lines	7,40
(d) Hetauda (Manual)	Installation and distribution of 100 lines	6,50
(e) Malangwa (Manual)	Installation and distribution of 50 lines	3,98
(f) Janakpur (Manual)	Installation and distribution of 200 lines	8,40
(g) Rajbiraj (Manual)	Installation and distribution of 100 lines	6,50
(h) Dharan (Automatic)	Installation and distribution of 400 lines	16,70
(i) Biratnagar (,, ,,)	Installation and distribution of 2,500 lines	27,00
(j) Jhapa (Manual)	Installation and distribution of 100 lines	6,50
(k) Pokhara (Manual)	Addition and Distribution of 150 lines	7,50
(l) Bhairahawa (Manual)	Addition and Distribution of 150 lines	6,50
(m) Nepalgunj (Manual)	Addition and Distribution of 200 lines	8,40

4. Kathmandu - Bhaktapur carrier Service	Establishment of Carrier line		2,50
5. Kathmandu - Nepalgunj Wireless service	Establishment		51
6. Microwave	Establishment		1,26,06
7. Kathmandu - Raxaul Telephone line and Birgunj telephone exchange	Establishment of automatic exchange and carrier line from Kathmandu to Raxaul		
		Total	3,67,50

Expenditure up to date:

Out of the total resources for communication development Rs. 235.26 million was allocated for telecommunication. By the fourth year of the Plan, about Rs. 152.61 million or 65 per cent of the total allocation has been spent. Expenditure incurred in the different projects is given below:

TABLE 103

ANNUAL EXPENDITURE INCURRED IN TELECOMMUNICATION DEVELOPMENT IN THE THIRD PLAN

(In Rupees)

Name of the Projects	1965-66	1966-67	1967-68	1968-69	Total	1969-70[1]
1. Central Telephone Exchange	3074065	1299760	900016	1157680	6431521	600000
2. Wireless Extension	—	1203605	709728	495354	2408687	800000
3. Biratnagar C. B. Telephone Extension	214377	218290	233213	107620	773500	—
4. Kathmandu - Raxaul main line	—	46903	1461477	3700000	5208380	4765000
5. Nepal - Pakistan Telecommunication	173990	99905	46445	—	360340	—
6. Nepal -India Telecommunication	81572	—	—	—	81572	—
7. Kathmandu - Calcutta teleprinter service[2]	—	completed —	—	—	—	49000
8. Kathmandu - Delhi Wireless Service	-- NOT SPENT		—	—	—	1681000
9. Biratnagar- Calcutta Telephone Service	AGREEMENT NOT FINALIZED			—	—	81000
10. East-West Microwave system	NOT DECIDED FOR IMPLEMENTATION				—	2502000
Total	3544104	2868463	3392571	5460654	15265692	1047800

1 Original estimate of Budget 1969-70

2 Year-wise break-down not available

According to the above table, it is clear that Rs. 152.65 million have been spent by the fourth year of the Plan. In each succeeding year there has been an increase in the capacity to spend in the field of telecommunication development. The budget estimates and expenditure incurred are given below:

TABLE 104
BUDGET ESTIMATES AND EXPENDITURES DURING THE THIRD PLAN PERIOD

Fiscal Year	Budget	Expenditure	Per cent
1965-66	38,56,690	35,44,004	92
1966-67	34,14,790	28,64,463	84
1967-68	39,78,000	33,99,571	85
1968-69	1,66,58,000	54,60,654	33
1969-70	1,04,78,000	Unavailable	—
Total	3,83,85,480	1,52,68,692	

Although allocations for the telecommunication sector have increased by 63 per cent, there has been only a 39 per cent increase in actual expenditures as shown in the above table. However, if the expenditures incurred in the Kathmandu-Calcutta Telex project are also included, the total expenditure would be in much closer accord with the budget.

In the Fourth Plan, Rs. 367.5 million will be spent in the different projects shown in the following table.

TABLE 105
ANNUAL ALLOCATION OF EXPENDITURE IN THE FOURTH PLAN

Project	Total Expenditure	1970-71	1971-72	1972-73	1973-74	1974-75
1. Kathmandu Telex	1,185	—	296	593	296	—
2. Bhairahawa-Gorakhpur, Nepalgunj - Lucknow telecommunication	400	—	—	—	200	200
3. Local Telephone Exchange:						
(a) Kathmandu	10,600	—	—	1,325	4,100	4,175
(b) Lalitpur (Patan)	1,120	—	400	500	220	—
(c) Bhaktapur	740	—	185	370	185	—
(d) Hetauda	650	137	376	137	—	—
(e) Malangwa	398	—	198	200	—	—
(f) Janakpur	850	200	400	240	—	—
(g) Rajbiraj	650	—	137	376	137	—
(h) Dharan	1,670	300	570	500	300	—
(i) Biratnagar	2,760	400	1,100	1,000	200	—
(j) Jhapa	650	137	376	137	—	—

(k) Pokhara	750	—	200	400	150	—
(l) Bhairahawa	650	—	137	376	137	—
(m) Nepalgunj	840	200	400	240	—	—
4. Kathmandu - Bhaktapur Carrier Service	250	—	150	100	—	—
5. Kathmandu - Nepalgunj Wireless Service	51	30	21	—	—	—
6. East-West Microwave	12,606	1,260	2,400	5,000	2,400	1,546
7. Birgunj Telephone Exchange						
Total	36,750	—	—	—	—	—

CHAPTER XIII

POSTAL DEVELOPMENT

Role of Postal Service in the development of the country:

There has been a considerable increase in the number of educated and literate persons in modern Nepal. The importance and necessity of the postal service has been increased because of a larger number of persons going outside the country for the purpose of travelling or for earning a living, an increase in the internal and external trade of the country, as well as several other reasons. Since surface roads are an important means of transportation, there is great need for the promotion and development of the postal service as a means of communications. It has occupied an indispensible place in the society by providing an easily available and cheap service to the general public. In a country like Nepal, with an undeveloped system of transportation and a rugged topography, the postal service is the most easily available and extensive method of contact at Governmental, institutional, family, and person to person levels. In addition, the postal service is the only means of establishing contact in most parts of the country. Furthermore, this state of affairs is likely to continue for a few more decades. Since the availability of a postal service constitutes an integral part of the necessary development infrastructures, the postal service programme must be implemented as vigorously as in the previous Plan period.

Historical Review:

Historically speaking, regular post services in the country seem to have originated from the system established by Prithvi Narayan Shah to exchange news which was essential to the process of national unification. There was no big problem of internal communication between small principalities and states into which Nepal was then divided. On the other hand, a regular system for the exchange of letters and news from one place of the country to the other became necessary for administrative and national security reasons after unification made the country larger. Although the postal service was originally established to meet the requirements of administration and national security, it has now developed into a large-scale national system for the service of the people, as well. It has become essential and indispensible for public service.

Historically, the origin of the present post office dates back to the year 1873. The first postage stamps of 1,2 and 4 annas were issued after the establishment of the General Post Office in 1881. After six years, post cards were introduced in 1887. In 1913, postmen were paid to carry mail all over the country, except for the district of Jumla. In 1900, (Bairung service), and in 1933, money order service were introduced on an experimental basis. But these services could not continue for long. Although postage stamps of different denominations had been issued, they were not, however, for a long period recognised in the outside world. In order to get recognition of Nepalese postage by neighbouring countries a Nepal-India bilateral agreement was signed in 1936 with regard to correspondance and unregistered mail. Post exchange offices were established in eight different border areas of the two countries. This was, undoubtedly, an important step for Nepal in the development of an international postal system. Two more important steps in the modernisation of the postal administration were taken with the establishment of sub-inspector's offices in 1935 and seven postal circle offices in 1940.

After the revolution of 1950, the postal services were further expanded. Nepal obtained membership in the World Postal Union in 1956, and about two years later, eight additional exchange offices were established in the southern border areas. Changes were also made in the previous bilateral agreement with India. The new agreement included some supplementary ones and was made more applicable to the modern world. Since April 1959, Nepal's international postal services have widened as a member of World Postal Union. With the aim of increasing the sale of Nepalese stamps in the national and international philatelic markets, the Nepal Philatelic Bureau was established in 1962. Internal airmail was introduced in 1958 and external air mail in 1959. Instead of the former Postal Circles, Postal Control Offices were organised in seven zones in 1960 in order to make postal administration more efficient and scientific.

The pace of development in the field of postal service has been faster since 1960. The Postal Training Centre was set-up during the Second Plan in 1962. In the same month, mail service was carried with the help of the third organisation (party) and the Indian railways in order to speed up internal service. The internal insurance service was started in 1962. Postal legislation confirming to international regulations and the modern age was passed in April, 1962. Bairung service was re-started throughout the Kingdom in April 1963. In accordance with the Nepal-India agreement, international insurance mail and parcel services were started in April 1965. Consequently, the Indian Embassy Post Office which had functioned for the last 150 years was closed down, and the Kathmandu Foreign Post Office was established. Since it was necessary to set-up a Central Office for carrying the mails to the proper destinations and for the timely sorting of mail coming from surface or air routes, the mail centre was established on September 1956. The Postal Inspecion Office was set-up in 1966 in order to prevent postal crimes and to settle any case which arises. A Postal Commodity Store was also established. With the aim of providing a facility to

consumers for easy monetary transactions in small amounts, the Postal Order Service was started in April 1966. A Dead Letter Centre was established in 1968 in order to investigate undelivered mail, to find the proper address, and to deliver it.

Expansion of Postal Services

There were 43 postal offices in the country in the year 1883. After 7 decades, this number had increased to 124 by the beginning of the First Plan period. During the First Plan, 293 additional postal offices were set-up. Four offices were added in the interim period between the First and Second Plans. The number of postal offices during the Second and Third Plan period was further increased by 30 and 255, respectively.

Up-to-date position of Postal Development

The cumulative number of post offices at the end of the Third Plan and before the beginning of the Fourth Plan is as follows:

1. General Post Office	1
2. Main Posts	14
3. Sub-Posts (including the Small Exchange and City Post Office)	90
4. Branch Posts	198
5. Extra Posts	153
6. Cooperative Posts	244
7. Other Offices	26
Total:	726

With the exception of 20 administrative offices, there are 706 regional (area) offices providing services for the public use. The total population of the country before the beginning of the Fourth Plan has been estimated to be 11,44,000 over an area of 54,362 square miles. Accordingly, each postal office is serving a population of 15,643 and in area of 77 square miles.

Objectives and Policies in the Fourth Plan

The following objectives and policies have been adopted in the Fourth Plan:

(a) to carry out this plan as the first phase of the long-term twenty year plan;
(b) to give due priority to the opening of additional post offices in the expansion of postal services;
(c) to take necessary steps in order to make the postal services financially self-sufficient;
(d) to emphasize the construction of postal buildings;
(e) to develop the postal-services within a group, making it efficient and capable, although it is included in the general administrative service.

In the Fourth Plan, the policy has been adopted to expand the postal services at the rate of 10 additional postal offices for each government postal office. Thus in the Fourth Plan, the target has been set up to establish 5 sub-posts, 50 branch posts and 550 additional post offices. Similarly, 25 postal lines will be expanded at the average rate of 5 per year. In short, the kinds and numbers of the projects to be undertaken during the Plan period are as follows:

Project	Present position	Target of the Plan	Total
1. Sub-post	90	5	95
2. Branch Post	198	50	248
3. Additional post	153	550	703
4. Postal Line	37	25	62
5. Mail Service	—	—	—
6. Commodity Supply Store	—	—	—
7. Regional Office of the Commodity Store	—	2	2
8. Commodity Workshop	—	1	1
9. Building Construction	35	30	65
10. Philatelic Development	—	2	2
11. Training Development Programme	—	—	—
12. Regional Dead Letter Office	—	2	2
13. Postal Museum	—	1	1
14. Service Extension & Improvement	—	—	—
15. International Service	—	—	—
16. Mobile Inspection Team	—	5	5
17. Maintenance of Continuing Projects	—	—	—

1. Sub posts:

The ratio between sub and branch post offices has been determined to be ten to one. This is the same as the ratio between the government and additional posts. But in some strategic areas it has become essential to set-up sub-post offices and to upgrade some of the branch offices because of growing responsibility during the Plan period. Keeping in view all these pros and cons, about 20 sub-post offices are urgently needed. It has been envisaged to set-up 5 sub-posts during the Plan period (or one per year) and to expand them more economically as soon as possible.

2. Branch posts:

In the previous Plan, about 100 sub-post offices were established. But in accordance with the policy of establishing the less expensive posts, during the Fourth Plan, only 50 post offices will be established.

3. Additional posts:

Because of the above mentioned reasons, about 550 additional post offices will be established during this Plan period. According to estimates, one post office is supposed to serve for a population of 3,000 to 5,000. Therefore, the number of posts should be increased considerably, keeping in view the pattern of scattered settlement and the rugged topography of the country. Thus in this Plan period effors will be made to set up 550 posts.

After completion of the three projects dealing with the extension of postal services mentioned above, the total number of postal offices will be 1,311. The population of Nepal during the Fourth Plan has been projected to reach 12 million. The area of Nepal is 54, 362 square miles, each postal office will serve on the average, an area of 41.5 square miles and a population of 9,153.

4. Postal line:

In a country like Nepal with a decentralised administrative system at the local level, the exchange of letters within and between the units via a speedy and direct route of communication is essential for development programmes and administration. Thus in the Fourth Plan, 25 additional postal lines will be set up in order to reduce the distance of postal routes.

5. Mail services:

Some portions of the Mahendra Highway, the Prithvi Highway, the Siddhartha Highway and the Zonal & District roads are nearing completion. They will be servicable for all weather, therefore, mail service in 10 divisions will be carried out on a contract basis. Similarly, in the remote and inaccessible area, new STOL airfields are being constructed and made servicable. This will mean that air mail will be made available in 6 divisions.

6. Commodity Store:

The necessary resources will be made available to acquire papers, stamps, mailing bags, weights and other measures and counter machines etc., which are essential for carrying out the administration of the postal-services.

7. Regional Office of the commodity supply:

The Central Commodity Store, which has to act as a Super Commodity Store in supplying the needed materials for several offices scattered in 75 districts of the country, has been facing difficulties in purchasing items both outside and inside the country and then in storing them for later distribution throughout the country. It has, therefore, been planned to set up 2 regional offices in Biratnagar and in Nepalgunj.

8. Commodity Workshop:

The necessity of being self sufficient in such technical goods such as stamps and letter boxes has been recognized, and therefore, a Commodity Centre will be set up in a miniature form, having only limited production capacity. This will be operated on an experimenal basis.

9. Building Construction:

The lack of Government buildings for postal services is one of the major bottlenecks. Also the available buildings often cannot fulfil the requirements of the area. This has been creating a problem in the efficiency and skill of administration. About 80 per cent of the postal buildings are now rented. Therefore, in this Plan period, greater emphasis will be given to the construction of new postal buildings. Under the building construction programme, about 30 postal buildings will be completed in the following districts:

1. Kathmandu	3
2. Sindhupalchowk	1
3. Parsa	1
4. Routahat	1

5. Ramechhap		1
6. Sarlahi		1
7. Bhojpur		1
8. Okhaldhunga		1
9. Ilam		1
10. Dhankuta		1
11. Sunsari		1
12. Gulmi		1
13. Gorkha		1
14. Shyangja		1
15. Baglung		1
16. Dang		1
17. Sallyan		1
18. Surkhet		1
19. Dailekh		1
20. Jumla		1
21. Doti		1
22. Baitadi		1
23. Dadheldhura		1
24. Bhaktapur		1
25. Janakpur		1
26. Manang		1
27. Banke		1
28. Sindhuli		1
	Total:	30

10. Philatelic Development:

During the Third Plan, foreign currency worth approximately 300,000 was earned by making Nepalese postage stamps available in the national and international philatelic market. Thus, keeping in mind the growing popularity of Nepalese stamps, the annual foreign exchange earnings from stamps in the Fourth Plan has been projected at Rs. 1 million. This will be achieved through the publication of attractive stamps, wide advertisement and publicity, along with the necessary folders, booklets and a complete inventory of the postal ticket collection list. All of these will add to the national income. During the third or fourth year of this Plan, two small area offices, one in the east and the other in the west, will be opened to provide services to postage stamp collectors from outside and inside the country. Moreover, a sales organization in the philatelic centre of the United Nations will be made through a bilateral agreement with the United Nations.

11. Training Development Programme:

In view of increased demand for trained personnel in the postal services during the Fourth Plan period, efforts will be made to make the present training system more productive both qualitatively and quantitatively. The following work will be included under training:

1. To publish the curriculum
2. To arrange hostel facilities for 50 trainees.

3. To modernise the postal training Centre, providing audiovisual equipment and other needed materials for training.
4. To set up a postal library
5. To arrange the specially trained and other needed staff for training.

12. Regional Dead Letter Office:

In the Third Plan, a Dead Letter Office unit was established on a small-scale. However, this has proved to be failure since it has had to deal with letters from all of Nepal. Therefore, during the Fourth Plan, it has been envisaged to set up two dead letter offices, one in Biratnagar in the east and one in Bhairahawa in the west.

13. Postal Museum:

During this Plan period, one small postal museum will be set up to preserve the valuable, rare, ancient, and historically important documents such as inscriptions stamps, tools and other related materials.

14. Service extension and Improvement:

In order to extend postal services for the public, the following programme will be implemented:

1. To organise and conduct the internal insurance letter programme which was started in provious years and to make it more widely used as soon as possible.
2. To improve and give wide recognition to the postal order services which proved to be successful in the Third Plan.
3. To mordernise the internal parcel service and bring it up to international standards.
4. To set up the postal savings banks if proved feasible by experimentation at a selected post office.

15. International Services

In the Fourth Plan, the following agreements will be signed and services implemented:

1. Entering into two extensive multilateral agreements regarding international insurance letters and parcel services formulated under the sponsorship of U.P.O. and to make such agreements (which had been only bilateral in the preceeding plan period) complete and extensive.
2. To operate postal order Services with India.
3. To establish three exchange postal offices in the three northern or southern border centers for international postal exchange.
4. To operate money order services on the basis of a bilateral agreement with India.

16. Mobile Ispection Team:

During the Fourth Plan period, it has been envisaged to organise a mobile team consisting of 5 persons whose duty will be to travel regularly and to inspect and make the postal services more efficient.

17. Maintenance of Continuing Projects:

Maintenance work will be continued on projects started in the previous plan period.

Financial Outlay:

In the Fourth Plan, about Rs. 244.51 million will be spent for the improvement and expansion of the postal services. The details are as follows:

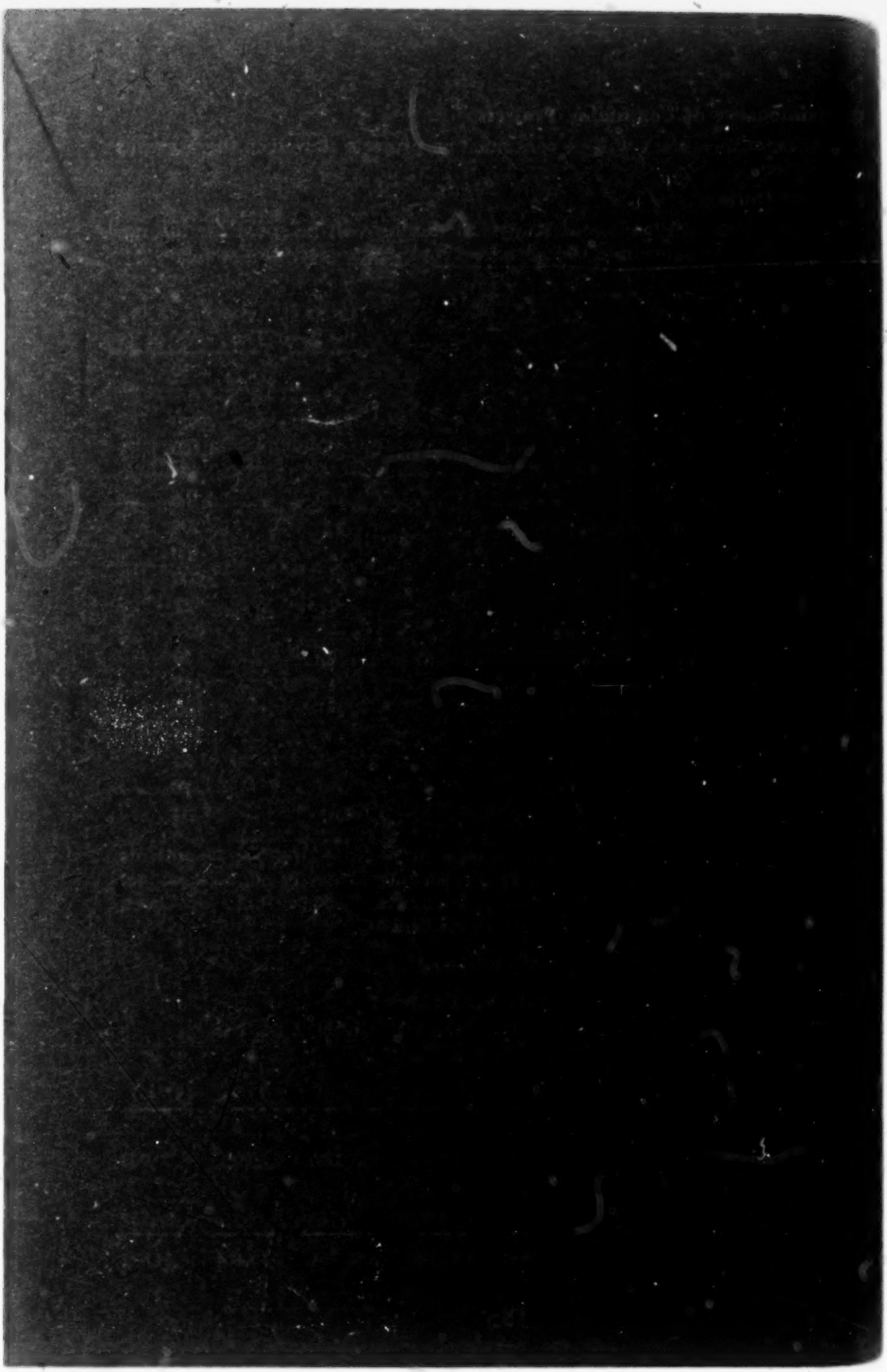
Projects	Target of the Plan	Amount in the Thousands' of Rs.
1. Sub-post	5	210
2. Branch Post	50	5,486
3. Additional post	550	4,600
4. Postal Line	25	1,400
5. Mail Service	—	1,200
6. Commodity Supply Store	—	2,500
7. Regional Office of the Commodity Store	22	200
8. Commodity Workshop	1	500
9. Building Construction	30	3,000
10. Philatelic Development	2	500
11. Training Development Programme	—	250
12. Regional Dead Letter Office	2	50
13. Postal Museum	1	125
14. Service Extension and Improvement	—	200
15. International Service	—	350
16. Mobile Inspection Team	—	50
17. Maintenance of Continuing Projects	—	3,850
	Total:	24,451

N.B: Of the total outlay, expenditure relating to No. 9 and No. 11 projects come under development budget according to newly adopted budget definition. Hence, in the Fourth Plan, Rs. 3,250,000 only has been shown as an outlay for Postal Development.

TABLE 106(A)

POSTAL DEVELOPMENT
ANNUAL ALLOCATION OF EXPENDITURED DURING FOURTH PLAN PERIOD

Project	Total	1970-71	1971-72	1972-73	1973-74	1974-75
1. Postal Building construction	30,00,000	4,00,000	5,00,000	6,00,000	7,00,000	8,00,000
2. Training Development	2,50,000	50,000	52,900	46,764	15,464	84,872
Grand Total:	32,50,000	4,50,000	5,52,900	6,46,764	7,15,464	8,84,872



TABLE

ANNUAL BREAK DOWN OF PHYSICAL & F

Project	1970—71		1971—72	
	Physical Traget	Amount	Physical Target	A
1. Sub-post	—	—	1	
2. Branch-post	8	3,13,486	9	6
3. Additional post	80	2,43,708	100	5
4. Postal line	3	64,615	4	1
5. Building Construction	4	4,00,000	5	5
6. Commodity Supply Store	12%	3,00,000	16%	4
7. Mail Service				
(a) Additional Inspectors	—	—	5	
(b) Means of Mail Service				
1. Mail van	—	—	3	1
2. Mailester	—	—	4	
3. Bicycle	—	—	50	
(c) Land / Air Rout				
1. Land Rout	—	—	1	
2. Air Rout	—	—	1	
8. Regional Office Of the Commodity Store	—	—	—	
9. Commodity Workshop	—	—	—	
10. Philatelic Development				
(a) Philatelic Bureau	12%	33,000	16%	
(b) Regional Branch	—	—	—	
11. Training Development				
(a) Qualitative	Publication of course books.	50,000	Furnished with modern equitments.	
(b) Quantitative	—	—	1 Instructor	
12. Regional Dead Letter Office	—	—	—	
13. Postal Museum	Kathmandu	45,000	—	
14. Service Extension & Improvement	Extension of postal order, insurance service	35,000	Extension of postal order service	
15. International Services	—	—	2 Exchange post offices	
16. Mobile Inspection Team	—	—	1	
17. Maintenance of continuing projects	—	7,66,000	—	7
Total	—	22,50,809	—	34,

TABLE 106 (B)

DOWN OF PHYSICAL & FINANCIAL TARGET OF

1971—72			1972-73	
Amount	Physical Target	Amount	Physical Target	Amount
—	1	19,091	1	38,182
13,486	9	6,66,157	10	10,58,015
43,708	100	5,48,343	110	8,83,441
64,615	4	1,50,769	5	2,58,462
00,000	5	5,00,000	6	6,00,000
,00,000	16%	4,00,000	20%	5,00,000
—	5	10,000	10	30,000
—	3	1,35,000	3	1,35,000
—	4	30,000	5	37,500
—	50	17,500	50	17,500
—	1	—	1	—
—	1	—	—	—
—	—	20,000	1	80,000
—	—	—	—	—
33,000	16%	44,000	20%	55,000
—	—	—	—	—
50,000	Furnished with modern equitments.	50,000	Library Establishment.	40,000
—	1 Instructor	2,900	Addition of staffs	6,76
—	—	—	—	—
45,000	—	20,000	—	20,0
35,000	Extension of postal order service	35,000	Modernisation of internal post parcel service.	20,0
—	2 Exchange post offices	50,000	Initition of Postal order with India & moneyorder service.	50,0
—	1	4,546	1	9,
7,66,000	—	7,66,000	—	7,66,
2,50,809	—	34,69,306	—	46,04,

HE FOURTH PLAN 1970—1975

Amount In Rs.

1973-74		1974-75		1970-1975	
Physical Target	Amount	Physical Target	Amount	Physical Target	Amount
1	57,273	2	95,454	5	2,10,000
11	14,89,057	12	19,59,286	50	54,86,000
120	12,49,003	140	16,75,505	550	46,00,000
6	3,87,692	7	5,38,462	25	14,00,000
7	7,00,000	8	8,00,000	30	30,00,000
24%	6,00,000	28%	7,00,000	100%	25,00,000
15	60,000	20	1,00,000	50	2,00,000
4	1,80,000	5	2,25,000	15	6,75,000,
5	37,500	6	45,000	20	1,50,000
100	35,000	300	1,05,000	500	1,75,000
3	—	5	—	10	—
—	—	1	—	6	—
1	80,000	—	20,000	2	2,00,000
1	2,50,000	1	2,50,000	1	5,00,000
24%	66,000	28%	77,000	100%	2,75,000
1	75,000	1	1,50,000	2	2,25,000
Construction of hostel	—	Completion of hostel construction	50,000	—	1,90,000
3 Instructors	15,464	Conduct of high & low level session	34,872	—	60,000
Biratnagar	16,500	Bhairahawa	33,500	2	50,000
—	20,000	—	20,000	1	1,25,000
Survey & report of savings bank system	10,000	Adaptation of savings bank system in some main office	1,00,000	—	2,00,000
	1,00,000	Establishment of exchange post offices & other works	1,50,000	—	3,50,000
(a) Additional measures be-taken for postol & money order service					
(b) To enter into to agreement regarding insurance & parcel service formulated under sponsorship of the U.P.O					
1	13,636	2	22,727	5	50,000
—	7,66,000	—	7,66,000	—	38,30,000
—	62,08,125	—	79,17,806	—	2,44,51,000

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CHAPTER XIV

NEPAL ENGINEERING INSTITUTE

The experiences of Nepal and other developing countries have shown t the shortage of technical manpower (both skilled and semi-skilled) has n one of the main problems encountered in the implementation of deve- ment projects. As a large portion of total investment in the process of nned development is allocated for construction work, the demand for nicians, trained in their respective fields, will continue to increase. Not y has there been a shortage of technicians capable of operating construc- work at different levels, but also of skilled and semi-skilled workers construction work. Because of the unavailabiliy of suitable workers, ny projects have remained behind schedule.

It is thus essential that the necessary steps be taken to augment the nber of technicians and labourers, so that construction will run more othly. Since it has generally not been possible to make arrangements trainning an adequate number of technicians and skilled labourers es- ally high-level technicans, are being sent abroad for training under a erent education programme. As it was planned to provide trainning to dle and low level technicians within the country, significant steps tow- s that end have been taken in the past few years.

In this process, the Nepal Engineering Institute was established in the r 1961. Arrangements have been made to provide overseer-level techni- training in civil Engeering at the Institute ever since it was set up. he beginning of the Fourth Plan, 321 trained persons have already been le available from the Institute. In addition, the construction of a labora- building and a student hostel have also been completed. Effective steps e also been taken to make the Institute well-equipped by providing the uired shades and equipment for different workshops.

The volume of development projects undertaken in the country has increasing. Accordingly, more technicians and skilled workers are nee- Training will, therefore, be provided to overseers in the fields of elec- l engineering, telecommunication, and civil aviation, as well as civil neering. The duration of the training will be three years. Arrangements also be made to provide training in different fields: above all, plum- pipe fitting and maintenance of heavy equipment. In addition, an edu- nal programme for wood working and electricity will be formulated,

and skilled workers of different levels will be trained. In addition to this, the old trainees will also be provided refresher courses and special training in order to acquaint them with modern equipments. In accordance with this, the Institute will train the following personnel in different trades during the Fourth Plan.

TABLE 107

	Capacity	1970-71	1971-72	1972-73	1973-74	1974-75	Total
Middle Level:							
Civil Engineering	60	46	58	46	60	60	270
Electrical Engineering	60	—	—	30	30	30	90
Telecommunication Engineering	—	—	—	—	60	60	120
Aviation Control Engineering	—	6	6	6	6	6	30
Skilled Workers:							
Mason & Concreting	—	120	120	120	120	120	600
Plumbing	—	120	120	120	120	120	600
Wood Working	—	120	120	120	120	120	600
Telephone Operating	—	24	24	24	24	24	120
Telex:							
Sales & Account Clerks	—	12	12	10	10	12	56
Teleprinter operator	—	7	7	10	10	10	44
Aviation Communicator	—	10	10	10	10	10	50
Aviation Radio Technicians	—	—	—	—	36	—	36

As the demand for technicians and skilled workers will be partially met, it is hoped that it will be helpful in the implementation of development projects such as the construction of roads, buildings, irrigation facilities etc. In order to expand the training available, machinery, a concrete laboratory, a soil-testing laboratory, and hydraulic laboratory will be set up in the Institute during the Plan period.

It is estimated that Rs. 23.3 million will be spend on the projects concerning this Institute, including Rs. 17.929 million to be contributed by UNSF. The remainder will be borne by His Majesty's Government.

CHAPTER XV

INDUSTRY

Industrial development is essential in order to increase production and per capita income at a rate fast enough to provide a basis for the economic development of the country; to decrease the population's dependence on the agricultural sector; to provide profitable employment for the increasing number of educated persons in the community; and to better utilize the resources of the country. On one hand, it could be said that industrial development of the maximum possible extent is necessary to increase the pace of development of the country; on the other hand, the infrastructure required for industrial development is not entirely present in Nepal. The need of raw materials for a healthy industrial development of the country has been acknowledged, but no substantial deposits of those raw materials essential for the mineral industry have yet been discovered. The industrial feasibility study of forest resources in the country has been started only recently, and it has not yet been possible to fulfill the demand of agro-based industries. The market for any large scale industrial development is also lacking and the extension of purchasing power and market development require time. In this context, it may be added that the market in the country has become more accessible because of improvements in transport and communications facilities. The industrial development of a developing country like Nepal, which has need of a market and raw materials, requires facilities for international trade and transit. For this purpose, the Trade and Transit Treaty with India and its proper implementation is especially important. Our experience in industrial development has been very short and the country still lacks experts in management affairs. All possible efforts for industrial development have been made in preceeding years, even with the mentioned difficulties.

Progress up-to-date

The real industrial development of Nepal started as a result of the establishment of some industries due to the extraordinary international demand created during the Second World War. Sevreal industries which had been started locked a solid base and disappeared in the post war period. Thus, there was no progress worth mentioning in the industrialization of the country until the year 1956 when the idea of planned economic development was initiated. Several industries were to be set up during the last Plan period, primarily in the private sector. However, most of the targets

could not be attained because of the undeveloped nature of the fundamental infrastructure in the private sector and because industrial policy had not been classified in an extensive manner. Certain industries also registered growth which had not been included in the Third Plan and which therefore could be of only limited help in the development of the country. In the public sector, a sugar mill and agricultural implements factory at Birgunj, a cigarette factory at Janakpur, a leather and shoe factory and the brick and tile factory at Kathmandu were set up. In accordance with the priorities fixed in the Third Plan, a beginning was made in the establishment of a cement factory at Kathmandu, and special facilities were being provided for the establishment of cotton textiles factory at Bhairahawa. Industrial Districts were set up in Patan, Balaju and Hetauda as envisaged in the Second Plan, and preliminary work to set up industrial districts at Dharan and Nepalgunj was also started during the Third Plan period. There have been some important achievements in the creation of a basis for industrial development. As raw materials constitute one of the basic prerequisites of industrialization, it is necessary to have information about the country's natural resources and their development. A survey of forest resources in the Terai and inner Terai region of the country has been completed, and preliminary arrangements for a detailed feasibility study of their industrial utilization were made during the Third Plan period. Because soil surveys are of utmost importance in the feasibility studies of commercial agriculture and preliminary work in this field has been started in the country. The study of mineral resources has also been continuing. With progress in the agricultural sector, the purchasing power of farmers should be augmented which in turn should help to increase the demand for industrial goods. The development of transportation has also brought markets throughout the country nearer to one another. Legislation regarding the provision of facilities to industries and research work done in this field will also be of help in future industrial development. The Nepal Industrial Development Corporation (NIDC) has been set up. As industiral credit is extremely essential for the development of this sector, industrial loans amounting to Rs. 543 and 113 million have been made available during the Third and Second Plan periods, respectively.

TABLE 108

LOAN APPLICATIONS APPROVED BY NIDC TO INDUSTRIES AND PAYMENT MADE IN DIFFERENT CURRENCIES DURING THE THIRD PLAN PERIOD

Year	Loan granted (in million of Rs)	Payment on loan
1965-66	5.066	8.134
1966-67	29.923	8.360
1967-68	7.758	3.891
1968-69	14.603	1.322
1969-70 (estimated)	57.700	19.338
Total:	115.05	41.045

The following amounts of foreign exchange have been utilized by industries taking loans through foreign agencies:

	(Rs in Millions)				
	1965-66	1966-67	1967-68	1968-69	1969-70
German mark	1.500	0.157	0.079	0.022	3.5
Dollars, US	0.122	0.027	0.009	—	—
Indian Rs	1.082	3.989	2.160	0.211	10.0

In addition to this, cooperation has been extended in the operation of different industries by investing in shares from the above corporation.

TABLE 109

EQUITY INVESTMENT

(Rs in Million)

Year	Granted	Investment in Equity
1965-66	0. 68	1. 23
1966-67	2. 75	0.572
1967-68	0.155	0.339
1968-69	1.331	0.214
1969-70	—	10. 00
Total	4.916	12.355

TABLE 110

FIGURES ON PRODUCTION OF SOME MAJOR INDUSTRIES DURING THIRD PLAN PERIOD (in terms of industry and Year)

Name of Industry	Unit	1965-66	1966-67	1967-68	1968-69	1969-70*
1. Jute	M. T.	17,325	12,191	12,179	13,958	15,000
2. Sugar	"	9,912	4,410	3,279	9,656	24,000
3. Cigarette	000 sticks	6,35,964	9,54,021	11,14,936	16,76,575	20,00,000
4. Match	Gross	N.A.	4,64,595	4,24,431	4,67,993	5,00,000
5. Shoe	Pairs	29,838	20,095	28,654	32,102	50,000
6. Stainless steel	Kg.	2,32,000	3,81,000	7,38,000	24,19,071	7,50,000
7. Refined Leather	"	58,979	56,975	64,219	99,815	1,60,000
8. Textiles	Metres	12,93,494	20,98,004	24,92,680	35,41,423	25,00,000
9. Tea	Kg.	N.A.	N.A.	13,641	12,100	18,000
10. Iron goods	Tons	"	"	1,279	2,500	5,000
11. Nylex Buttons	Gross	"	"	1,88,409	2,77,791	4,00,000
12. Soap	Mds.	"	"	5,743	9,068	7,000
13. Wool	Kg.	35,300	14,446	3,840	11,067	N. A.
14. Wine	Gallons	30,654	4,658	11,371	52,747	"

* The figures for the year 1969-70 represent estimation of annual production made on the basis of date of available up to the month of December.

Industrial Policy of the Fourth Plan and Facilities to Industries:

It has been the objective of the Fourth Plan to encourage the establishment of industries mainly in the private sector. If found to be necessary, only one or two industries would be set up in the public sector. No specific industry has been named in this respect. The following industries in the private sector will be encouraged during the Plan period:

a. Agricultural industries based upon indegenious raw materials which would help in the industrialization of the country, as well as the development of agriculture. Such industries as tea and jute which would increase exports after fulfilling the requirement of the country will be given greatest priority.

b. Industries based on natural resources of the country such as forest products and drugs will be established.

c. Industries based on such national resources as minerals will be established. Those industries which would produce basic materials and increase exports would be given preference.

d. Industries like textiles, whose products are being imported in large quantities, which would produce materials needed for every-day life, and which would decrease imports will be established.

e. Industries producing basic materials necessary for development (e.g. fertilizers, agricultural implements and cement) will be established.

It is essential that the private sector should be encouraged to set up such industries as mentioned above, giving them priority over other kinds of industries. In this context, priority will also be given to labour intensive industries. For this purpose, current legislation dealing with the facilities to be given to industries will be further extended and classified. It will be published after categorizing the large and small scale industries according to production. The facilities to be provided to industries in each class would be clearly stated in view of the long term requirements of the country. In other words, a definite and firm industrial policy will be followed This will be done early in the Fourth Plan period. In accordance with the policy to give more assistance to the Plan's priority industries (including foreign exchange and tax and loan facilities from different government departments and agencies), implementation will occur only after clearly stating the kinds of such assistance. Arrangements will also be made so that assistance clearly stated in this manner will be made automatically available after obtaining a license from the Department of Industries, and it will not be necessary to get seperate approval from other HMG departments for this purpose. Arrangements will be made for industries getting financial assistance or special facilities to have part of their profits so as to increase the capacity of already existing industries or to create new industries.

1. Industrial Services Center

It is necessary to make different services available for the coordinated and well-planned establishment and development of industries. During the Fourth Plan period, technical services, consulting services, feasibility studies, quality controls, etc. will either be provided through NIDC or a new autonomous organization.

The following services will be provided by this organization in the beginning:

a. Feasibility study and Technical Services:

It would make reports about different projects after feasibility studies by Nepalese and foreign specialists were made available to the industrialists. This will be to prepare different projects for the establishment of new industries.

b. Quality Control:

Arrangements will also be made during the Plan period to start quality controls on all industrial products, those for export and those intended to be consumed in Nepal. This will be implemented with the cooperation of laboratories and the Royal Drug Research Institute. Other laboratories will be set up as needed.

c. Industrial Cooperative (Sajha) Center:

As it is quite expensive for both small and large scale industries to repair their machinery in their own workshops and to have their own equipment for packing and weighing, industries would be helped greatly if cooperative services (Sajha) of this kind were to be made available at a reasonable cost.

2. Improvement of Currently Operating Industries:

During the Plan period, industries in the public sector and some industries in the private sector will be improved in the following manner:

a. Sugar Industry:

There are at present three sugar mills in Nepal, including one in Birgunj in the public sector and one each in Bhairahawa and Morang in the private sector. The production capacity of Birgunj Sugar Mill will be increased by 50 per cent which will mean a total capacity of 1500 metric tons. A fifty per cent increase in the capacity of Bhairahawa Sugar Mill will also make it self-sufficient.

b. Janakpur Cigaratte Factory:

The annual production capacity of Janakpur Cigarette Factory will be increased from 2 billion sticks to 3 billion sticks.

c. Agriculture Implements Factory:

The production capacity of Agriculture Implement Factory at Birgunj which is in the public sector, will be increased by 50 per cent. New kinds of agricultural implements will also be produced.

d. Leather and Shoe Factory:

It has become necessary to increase the production capacity of the factory, as well as to establish a slaughter house in Kathmandu in order to operate this factory profitably. That is why the production capacity of this factory will be doubled during the Plan period. Necessary facilities will also be provided to establish a slaughter house in Kathmandu in the private sector.

e. Brick and Tile Factory:

The production capacity of the Brick and Tile Factory situated at Harisiddhi will be doubled.

f. Jute Industry:

The Jute Mills at Biratnagar will be modernized, and assistance including loans will be made available to start production of new goods, such as carpets.

g. Tea Industry:

During the Plan period, the Nepal Tea Development Corporation will cultivate tea on additional land in the Terai at Chilimkot and near the East-West Highway in Jhapa District. As tea grown in the hilly regions is suitable for export, it would be cultivated at Kanyam Area in Ilam District after the land is obtained for this purpose. Facilities including loans will be provided to tea plantations in the private sector for their expansion. The aim is to fulfil Nepal's internal demands for tea and increase exports by the year 1980 by extending tea plantations, including those in NTDC and in the private sector.

3. Industries to be set up in private sector:

It is not possible to speak definitely, as yet, above the industries to be set up in the private sector. Detailed studies have yet to be done in those industries which have been found to be feasible at the present time. There is also the possibility that several other industries which have not been found to be feasible at the present time may be found to be so sometime in the future.

Taking all these factors into consideration, the target for the establishment of industries in the private sector is as follows:

TABLE 11

INDUSTRIES TO BE ESTABLISHED DURING THE FOURTH PLAN PERIOD

	Annual Production (capacity)
Class A	
(1) Import Reducing Industries	
Textiles	20 million Yards
Flour Mill	9,000 tons
Iron Pipe	3,000 tons
Soap	2,000 tons
Sugar crushing	daily 1000 tons sugar cane crushing
Brewery	1.8 million bottles (11 oz)
Slaughter house & Meat processing	Daily 25 Buffalos, 25 pigs, 130 chicken
Leather Tanning	11,000 Hides
Tobacco Refining	12,000 tons
Cigarettes	1000 million sticks
(2) Export Promoting Industries	
Jute	10,000 tons
Fruit canning & Preservation	40,000 bottles squash 14,000 bottles Jam
Resin and Turpentine	24,000 tons turpentine 10,000 tons Resin
Strawboard	6,000 tons
Ghee Refining	300 tons daily
Ginger Refine	1,500 tons
(3) Basic Industry	
Cement	65,000 tons
Iron and Steel	20,000 "
Brick and Tile	40 million
Class B	
Hotel	3,060 beds during the whole Plan period
Class C	
(1) Agriculture	
Modern Rice Mill	24,000 tons
Cold Storage	1,00,000 mds storage
Bakery Industry	3.6 million loafs
Vegetable ghee	7,500 tons
Feed Mixing Plant	50,000 metric tons

(2) Forests	
Pulp and paper	15,000 tons
Saw Mill	1 million cubic ft.
Plywood	19.2 million sq. ft.
Pharmaceutical based industry	— —
(3) Mineral based	
Paint and Varnish	2,000 tons
Glass	20 tons/day

Note: The above mentioned industries have been only given as examples. Licenses may be issued for setting up other industries which might fall in any of these categories.

j) Industrial Investment and Loans

It has already been mentioned that the private sector is going to be given the main role in setting up industries during the Plan period. It has also been stated that current legislation would be revised in accordance with the policy to set up more industries in the private sector. NIDC would also provide loans according to this policy. The approximate amounts of loans and investments to be made available by NIDC in the next five years is estimated to be as follows:

TABLE 112

INVESTMENT OF NIDC

(Rs in million)

Unit	Loans	Shares
1. Cement	22.8	2.4
2. Textiles	40.0	100
3. Animals	2.958	0.7
4. Plywood	4.345	—
5. Other industries (tourism, paper etc)	50.0	—
Total	120.103	13.1

It cannot be said that the private sector will set up all the basic and feasible industries capable of making special contributions to the industrial development of the country. The Government will attempt to establish paper, fertilizer and cement industries with the aim of gradually selling them to the private sector in the future. Rs. 15 million has been allocated for such investment in the public sector during the Plan period. In addition, a factory utilizing molasses obtained from Birgunj Sugar Factory will be established.

5) Industrial Districts

Industrial districts equipped with basic facilities are quite important in view of the consumption of industrial products in the country, experience in the operation and management of industries, the requirement of regional development, and the development of small and large scale industries. Since such districts tend to reduce imports by utilizing indegenious raw materials and help to create an industrial environment in the country, attention will be devoted to giving more assistance for the development of feasible sites outside Kathmandu Valley, a fact which would also contribute to regional development. The following programme has been included in the Fourth Plan under this concept:

a) Completion of work started in establishing industrial centres at Nepalgunj and Dharan,
b) To establish another industrial centre, either in Butwal or in Pokhara.
c) To construct twenty additional buildings at the Balaju Industrial District of Kathmandu and to expand Patan Industrial District,
d) To complete preliminary work in establishing one more industrial district in the country based upon a feasibility study in about the third year of the Plan period.

6) Project for the development of raw materials

Difficulties arise for many industries operating in Nepal because of the inadequacy of raw materials. In view of this factor, concrete programs should be implemented during the Plan period investigating quality control. These should be done in collaboration with the agricultural sector on such products as jute, sugarcane, tobacco, oilseeds, cotton, silk, etc.

7) Industrial Training

Necessary training of a short duration and of medium standard will be given in different industrial subjects at various technical training institutions which have been set up in the country. The ability of Kathmandu, Birgunj and Hetauda Centres to give training in useful and necessary subjects will be increased. During the Plan period, managerial training being provided by NIDC will also be made more extensive.

8) Labour Welfare Scheme

The contribution of labourers to the economic development of the country is very important. The all round development of the country is possible only if there is an environment of good-will between employers and employees. Concrete steps will be taken during the Plan period in the guidance of the interest of labourers, and attempts will be made to provide them with necessary training and assistance as far as possible.

9) Arrangement for Evaluation of Industrial Activities

The progress and contribution to the development of the national economy made by industries in public or private sector (those operating at the present time and those to be set up in the future) will be evaluated periodically by a committee consisting of independent and impartial experts. The committee will also review the industrial development programs of HMG and the operations of financial institutions in providing investment and loan facilities.

INVESTMENT IN PUBLIC SECTOR DURING THE FOURTH PLAN

(Rs in Million)

Projects		
1. Industrial services Center		4
2. Improvement of Current Industries		50
3. New Industrial Investment		38
4. Industrial Districts		15
5. Improvement and Research in raw materials		5
6. Industrial Training		1
Total	Rs.	108.5

CHAPTER XVI

COTTAGE INDUSTRY

Most of the farmers are busy in farming only for few months during the year and remain idle the rest of the time. Cottage industry could play an important role in solving this problem, as well as raising the national income and creating a sound basis for industrialization by mobilizing idle resources and manpower in the agricultural sector. It could help to fulfil the local demand for consumers' goods, to raise production by fully utilizing leisure time, to develop cottage industry and handicrafts by collecting the skills scattered in the village and suburban areas, and to prepare the skilled and semi-skilled workers needed for industrialization of the country.

Progress to date

Since 1957 His Majesty' Government has been taking different steps to develop cottage, village and small scale industries in the country. Up to the end of the Second Plan, emphasis was given to the establishment of Cottage Industry Centres and the training of people. But the trained personnel did not or could not be utilized and the knowledge that they had acquired from training was wasted. Due to the lack of proper arrrangements to utilize the trained personnel and the lack of coordination between planned trainning and the demand, the trained people remained unemployed, thereby ruining the usefulness of the programme. To develop and manage the village and cottage industries in a planned and effective manner and to avoid all the previous shortcomings, programmes, were formulated in the Third Plan on the basis of the report prepared by foreign experts. These programmes were tied to foreign aid for implementation, but the programmes could not be implemented due to the unavailability of aid money in time to be appropriated to the projects. The rate of development of village, cottage and small industres remained stand still during the Third Plan.

Fourth Plan

In fact, it seems that the revised programmes of the Third Plan were not executed according to the Plan. It is necessary to operate the continuing

projects with timely revision and to clarify the sphere of activities of the Cottage Industry Department in the development and expansion of the village and cottage industries during the Fourth Plan. Emphasis will be given to the establishment and development of different types of industries which will produce various handicraft goods, such as carved image, framing, casting, decoratives, wood, metal, stone, paper, soil and cloths etc. This will reduce import requirements by the utilization of locally available raw materials, as well as supporting the export oriented village industries based on forest, agriculture, animal and mineral resources. Proirity will also be given to those industries which will decrease imports and provide services such as the maintenance of radios, transformers, electric motors and produce goods other than those listed above, such as leather shoes, suit-cases and brief-cases. Thus the revised programmes of the Third Plan shall have to be implemented during the Fourth Plan. But, to make training more effective, to make the existing sectoral programmes more useful, to improve the quality of commodities, and to select the objectives for the local work, the following five year policy has been framed.

Policy

(1) The traditional handicrafts which use locally available raw materials will be developed. Simultaneously, local raw material surveys will be conducted. Economically benefical and import reducing industries will be developed on the basis of feasibility of location. Government assistance will not be provided to industries which may not turn out to be economical.

(2) Emphasis will be to strengthen and to make viable the existing cottage industries, rather than to set up new ones during the Plan period.

(3) Under the training programme, emphasis will be given to increasing the numbers, together with improving the standard and type of training.

Programme

The development programme of cottage industries is divided into five main catagories:

1. Industrial and Technical Services Programme
2. Village Industries Programme
3. Training Programme
4. Handicrafts Design Programme
5. Sales Management Programme

1. Industrial and Technical Services Programme:

The industrial services programme will be given high priority under this programme. The following projects are included:

(a) Loan, Investment and Hire-purchase:

Under this programme low interest loans, machines and implements will be provided on instalment basis for the development and establishment of existing and new industries. In the second year of the Fourth Plan, an autonomous organization (Small Industries Financial Corporation) will be established to perform the tasks of loan, investment and hire-purchase in a planned way:

Target:

Financial Loan Assistance	Rs. 10,00,000
Distribution of machine and implements on instalment basis	Rs. 10,00,000

(b) Small Industries Services:

Under this programme, the following projects will be implemented feasibility and industrial survey, project preparation and distribution, consultation, quality control and standardization, calendering service, and the establshment of pilot industries. For a period of five years, targets will be as follows:

i. Twenty detailed reports on industries will be prepared on the basis of industrial feasibility surveys.
ii. Industrial surveys in twenty districts will be conducted.
iii. One hundred and fifty industrial project reports will be prepared and distributed, including 45 for handicrafts, 30 for village industries and 30 others.
iv. Technical consulting services to different industries will be provided on request.
v. Quality control and standardization through laboratory and other means will be initiated.
vi. A cotten textile calendering service will be managed and run and preliminary work on the establishment of calendering services to potteries at Thimi and Bhaktapur will be done.
vii. Some small industries which use indigeneous raw materials and which help to reduce the level of imports will be established in the form of pilot projects.

2. Village Industry Programme:

The village industry programme will be implemented for the economic development and reconstruction of special industries such as carpet, pashmina, hand made paper etc. Under this programme, training will be given in three occupational trades which have employment opportunities in the local markets and have local specialities in every district of the country. The existing ten village industry and offices and thirteen zonal cottage industry centres will be converted into Village Industry Centres. During the Plan period, twelve such Centres will have permanent buildings. Under the programme, training will be given; and as far as possible, production and sales activities will be managed through the private sector. For financial assistance, miscellaneous industrial services and grants will be provided. During the Plan period, twelve viable village industry-production centres will be established to provide jobs for the trained people and also to produce daily consumption goods. These centres will be operated on the basis of detailed industrial surveys and existing village industry centres and zonal centres will converted into village industry centres in the second year of the Plan after a full review of their working subject and location.

The main emphasis of these centres will be on industrial promotion and services. Attention will be paid to the usefulness of training, rather than to merely increase the number on the basis of local needs. This training will usually be of one year in length.

. Training Programme:

Since 1957, various types of training programmes have been arranged by the Cottage Industry Department. How far, the training programme has been beneficial for the development of cottage industry and for the provision of jobs for the trainees according to the training they received has not been evaluated so far. It has been felt necessary, on the basis of past experiences that overall improvement in the type and subject of training should be made in order to meet manpower requirements and to increase the utility of training. The training programme in the Fourth Plan, formulated after considering the form of such changes and improvements, shall be as follows:

(a) Technical training:

By classifying training, improvements will be made in curriculum and standards. With this in mind, the training will be of the following types:

I. Higher training (Basic subject):	
Mechanical	General training course, for two years' and one more year for diploma,
Electrical	General training course, for two years' and one more yearfor diploma,
Furniture & Furnishing	General training course, for two years' and one more year for diploma.
II. General training:	
Hosiery and Sewing	Two Years' (existing two divisions will be merged into one)
Leather, soil and wood craft	Two years.
III. In-cservice training and change into production unit:	
Clothes, furniture and paper (6 months)	From the third and fourth year of the Plan training will be provided in the changed production unit.
Leather and curios (excluding woodcrafts) 6 months	The Nepal Footwear products Pvt. Ltd., Nepalese Crafts Pvt. Ltd. will be merged into one unit and training will be arranged from the third and fourth year of the Plan.

A building will be constructed for the purpose of above mentioned training.

(b) Village Industries Training:

To operate the village industries more efficiently, training in some basic subjects such as management, sales, book-keeping, and accountancy in service training and others related to village industries will be provided. This kind of training will be to provide to the concerned people through the Village Development Training centre at Pokhara. A feasibility study will be done for the establishment of another centre if it is deemed necessary. The training will be based on organised curriculum in the form of short and long term training programmes. Technical training in a maximum of six subjects consi-

dered to be most useful to our country, will be provided at the centre. The function of this centre will be to supplement the efforts to develop and expand village industries. By the joint efforts of district and village industry training centres, mobile teams will be sent to the different parts of the country to train and develop traditional handicrafts, and also to provide new implements according to need.

4. Handicrafts Design Programme:

The design of goods, produced by various agencies such as private limited companies, loan receiving companies and sub-branches of Cottage Industry Department are not centralised and controlled, and are therefore produced in a random way without considering the demand of consumers. This hampers the future of industries. With the objective of bringing to life to the production of Nepalese arts and culture and providing more publicity for these goods, research work will be done concerning the tools and implements used in the development of handicrafts, village and cottage industries and the control of design of the produced goods. The programme is as follows:

(a) Control and preparation of new designs of sub-production branches under Cottage Industry Department—first year.
(b) Control and preparation of new designs for Pvt. Ltd. companies—second year.
(c) Establishment of research laboratory—second year.
(d) Preparation and distribution of designs to other industrialists—third year.
(e) Collection of artistic goods, establishment of collection centre for model designs and preparation of design catalogue—fourth and fifth year.

Preparation of design will be as follows:

(i) Design with specification—430 types.
(ii) Exploration and research of tools and implements—10 types.

This programme will be done by the handicrafts design division o the Cottage Industry Department.

5. Sales Management Programme:

Sales management must play an important role in the development o cottage industry and handicrafts. The production of goods which can no compete in the market, will not lead to the permanent development of co tage industry. However, there are certain goods whose sale, if made in a organised way, would reduce the gap between production and demand in th market and would make it possible to better organize the market. Cons dering these things, the department will encourage the production of su goods which can be sold within and outside the kingdom. The followi arrangements will be made for the sale of goods produced in this mann

(a) The technicians, posted in 13 centres outside the Kathman Valley, will study the market and will provide technical advice and forwa credit through cooperatives and other institutions in the private sector order to float goods in the market. This function is a responsibility of village industry centres.

(b) A large number of handicrafts are produced in the small area of the Kathmandu Valley. It has been necessary to coordinate the development programme of the Department with the procurement of goods by the Cottage Industry Sales Emporium from the private craftsmen operating in the Kathmandu Valley. It is also necessary to have real development as well as the profits, if the handicraft industry is itself to be developed. The Department is consequently providing financial credit and technical advice to the producers for the general development. The programmes are to be coordinated with the attempts to encourage producers by improving market facilities. Thus the procurement of goods from producers by the Cottage Industry Sales Emporium will be made in close cooperation and consultation with the Cottage Industry Department.

TABLE 113

Estimated amount of Investment in Cottage Industry

Name of the Projects	In thousand Rs.
1. Industrial Service Programme	50,00
2. Village Industry Programme	80,00
3. Training Programme.	
a. Technical Training	40,00
b. Village Industry Training	35,00
4. Handicrafts Design Programme	22,00
5. Sales Management Programme	—
Total	2,27,00

CHAPTER XVII

TRADE

Both internal and foreign trade have a major role to play in the economic development of a country. A developing country like ours cannot meet all of its requirements by itself. Thus, to fulfil the demand for the necessities of life and for developmental works, the import of goods and services is necessary. It is also necessary that exports be augmented considerably. However, the present market for Nepalese goods is quite limited even though the development of internal resources depends upon foreign trade. Under such conditions, the Government, in recent year, has been pursuing a policy of export promotion and diversification of trade.

Progress to date

According to the present policy of His Majesty's Government, trade relations with different countries are being expanded as planned, while exports to over-seas countries have increased beyond expectations during the Third Plan period. One year before the start of the Third Plan (1964-65), total exports were approximately Rs. 14.4 million. This increased to about 31.8 million in 1965-66, Rs. 81 million in 1966-67, Rs. 94.8 million in 1967-68 and Rs. 146 million in 1968-69. This means that during the first four years of the Third Plan, the total exports to overseas countries has been of the order of Rs. 353.6 million. Of this amount, Rs. 252.4 million has been from the export of jute and jute-products alone. This shows the prime importance of jute and jute-products in our export trade.

Targets of the Fourth Plan

In addition to the traditional export items, the Government will provide necessary assistance as an incentive to promote the export of manufactured and other goods. Accordingly, His Majesty's Government will make arrangements to export semi-processed and processed goods instead of exporting them in the form of raw materials. So, during the Fourth Plan period, it is planned to double the export trade with overseas countries by gradually adopting the policy of commodity and country diversification.

In order to realise the above targets, a detailed survey of the conditions of the internal market and production capacity will be conducted. To raise the production of exportable goods, several objectives have been set:

greater uniformity of products will be achieved through the improvement of quality; godown facilities for storage will be provided for exportable goods; credit facilities will be provided to attract export business; and godowns and storage tanks will be made available to simplify the sales distribution pattern of necessary imported goods. For the attainment of these objectives, the following programmes will be implemented.

Programmes

a. A detailed national survey will be conducted to identify exportable goods, to estimate the exportable capacity of these goods, and to fix the short and long term export targets on the basis of all exportable goods.

b. At a few important international commercial centres, Nepal Trade representatives offices will be established to provide regular information on international market studies citing Nepal's trade interests. This is done in order to promote export trade and to formulate necessary policy adjustments.

c. Considering the compatibility between customs, taxes, and foreign trade policy, various steps will be taken to promote export trade on a more consistent basis.

d. A study for finding suitable markets for the export of those materials produced in Nepal and exported as raw materials, or semi-processed materials, or such other materials which are not exported will be conducted. Adequate assistance will be provided to the exporters of such materials, and export oriented industries will be established.

e. An institutional arrangement will be made to inspect the standard and quality of exportable goods before they are dispatched to foreign countries.

f. Godowns with 10,000 ton's capacity at Biratnagar, 5,000 ton's each at Birgunj and Bhairahawa, and 1,000 ton's each at Janakpur and Nepalgunj will be constructed to protect exportable goods and to promote exports.

g. In order to encourage the production of cash crops and to provide better prices for such goods to the producers, godowns and credit facilities will be made available in some places.

h. Institutional developments will be made to provide the necessary credit facilities and export guarantees to exporters in order to encourage their business. The existing financial institutions will also become more active in this field.

i. Reserve tanks will be constructed at Kathmandu, Birgunj, Biratnagar, Bhairahawa and Nepalgunj to have stocks of P.O.L. products such as petrol, diesel, kerosene, etc.

Capital Investment

The capital required for the smooth implementation of the above mentioned programmes will be Rs. 50 million during the Plan period. Of the above amount, Rs. 10 million is estimated for the construction of godowns, Rs. 30 million for the construction of oil tanks, Rs. 8 million for the preservation of exportable goods, and Rs. 2 million for promotional services and international exhibitions. Rs. 10 million from the public sector will be invested, while Rs. 40 million will be met from internal loans for the construction of godowns and oil storage tanks.

Transit Facilities

Transit facilities in a landlocked country like Nepal play a significant role in the expansion of trade with overseas countries. To encourage the foreign trade of Nepal, His Majesty's Government will take necessary steps such as the construction of better godowns at the Indian ports or the preservation of Nepalese goods, adoption of adequate and smooth transportation facilities as well as simple procedures for the dispatch and delivery of Nepalese goods at and through Indian territory, the simplification of import-export transit procedures and the encouragement of the creation of a seperate self-administered port area.

Trade Promotional Services

The necessary institutional system will be developed to provide regularly the necessary information and studies to traders and trading institutions within the country regarding the trends of international markets. This system will ensure success of the commodity and country diversification policy and will strengthen Nepal's commercial relations with different countries. Royal Nepalese Embassies abroad can contribute quite substantially to these efforts. Attempts will therefore be made to make them more active and capable in this sort of work. The offices of Commercial representatives will also be set up according to the requirements of different places. Such commercial information services will be provided and extended through the establishment of trade promotional centres during this Plan period. By this method, more reliable information regarding foreign trade and the international market will be made available to the public, and private sector within the country, for the achievement of the Government's trade promotional objectives.

Trade Development: State Trading and Private Sector:

Because foreign trade of the country can be conducted in a meaningful way only if internal trade is well organised, internal trade will also be increased and organised in accordance with the needs of development during the Plan period. Giving proper attention to its possible contribution to increase in exports from the private sector, necessary facilities and incentives will be provided to this sector.

The National Trading Company Limited in the public sector will be made more export-oriented and will play a major role in export promotional activities. Moreover, the private and public sectors will act so as to compliment one another.

The public sector will also play on active role in the fulfilment of import requirements of the country. But before taking such steps, equal treatment will be provided to both public and private sectors.

TABLE 114

TRADE DEVELOPMENT

(In Rupees)

Project	Investments	
1. Godowns construction	10 million	internal loan
2. Oil storage construction	30 million	internal loan
3. Export promotion survey	8 million	
4. Trade promotion & international exhibitions	2 million	
Total: Investment Loan	Rs. 40 million	

CHAPTER XVIII

TOURISM

A developing country like Nepal needs increasing amounts of foreign exchange during the process of its development. Foreign exchange (especially convertible foreign exchange) is as important as it is difficult to earn. There are four main sources of foreign exchange earnings at the present time. They are ex-servicemen, foreign aid, trade, and tourism. Of the above mentioned four sources, the first two are not very dependable. That is why we have to be more dependent upon trade and tourism and should consider both to be permanent and essential sources of increasing national income and earning the foreign exchange necessary for the development of our country. It has thus become necessary to develop the tourist industry to the greatest possible extent.

Progress to date

A Tourism Development Board was established in Nepal in the year 1957 in order to develop the tourist industry. Since the tourist industry could not be adequately developed by establishing Board, a separate department was established during the First Plan period. After the establishment of the Department, Nepal got membership in different International tourist Organisations. Among the worthwhile steps taken in the preceeding years for the development of tourism have been, the setting up of about 800 hotel beds of varying standards in Kathmandu (out which 206 have been five starred and 180 four starred). Also, the establishment of different travel agencies, the continued development of Tribhuvan Airport, the operation of air services by foreign airlines, and the increase in the international services of RNAC have been the major factors in the development of tourism in the preceeding decade. The development of places with tourist attraction like Nagarkot and Kakani, sight seeing services, trained guides, and increasing publicity for Nepal in the international field undertaken by the Department of Tourism have also contributed greatly to its development.

The foreign exchange earnings from tourism are the main sources of Nepal's convertible foreign currency, and have increased from Rs. 0.695 million in the year 1960-61 to Rs. 10 million by the end of the year 1968-69. The earining of convertible foreign exchange in the years 1964-65 and 1965-66 was Rs. 1.624 million and Rs.

3.029 million, respectively. On the other hand, the earning in the year 1966-67 was Rs. 6.05 million, or 100 per cent more than that of the year 1965-66. The main reason behind a 100 per cent increase in foreign exchange earnings has been due to the greater proportionate increase in the number of tourists resulting from the operation of Fokker air service, the opening of Annapurna Hotel and the arrangement of necessary accomodation facilities in other hotels. Since then, there has been a corresponding increase in earnings of foreign exchange by tourism in proportion to the increase in the number of tourists, except in the 1964-65. The earning of foreign exchange from tourism in the year 1968-69 amounted to Rs. 10 million, which was 42 per cent more than that in the preceeding year. In the first five months of the fiscal year 1969-70, earnings amounting to more than Rs 4.8 million were reported and it is expected that Rs 14 million will be earned by the end of the current fiscal year, a figure which happens to be 40.6 per cent more than the preceeding year.

The number of tourists visiting Nepal and the earning of foreign exchange are shown in the following Table:

TABLE 115

(Rs in Million)

Fiscal Years	No. of Tourists	Earning of Foreign Exchange
1964-65	10,356	1.624
1965-66	9,191	3.029
1966-67	15,577	6.038
1967-68	20,738	8.254
1968-69	28,189	10.00
1969-70 (first five months)	16,607	4.8

Thus, foreign exchange earnings have increased along with the increase in the number of tourists. Therefore, it has become essential to follow a well planned policy and programme during the Fourth Plan period so that tourism can make its maximum contribution to the economic development of the country. The proper implementation of programmes for the development of this industry is also essential.

Fourth Plan—Objectives and Programmes

A master plan will be prepared in the beginning of the Fourth Plan period in order to develop the tourist industry in a planned way. Sites of tourist attractions would be constructed and developed, and facilities for tourists in different parts of the country would continue to be created. While advertising at the international standards the private sector would also be encouraged to develop attractive places such as parks, lakes, hunting site and playground, and to make accommodation and travel facilities available to the tourists. The tourist industry cannot be successfully developed by the

programmes and implementation of the concerned department alone. Because its success is related to the programmes of different departments, due attention will be given to establishing complete coordination. In fact, the development of tourism is more dependent upon the programmes of other departments than of the Tourism Department alone.

Taking into consideration the experiences gained in preceding years and the other arrangements to be made during the Plan period, it is estimated that the number of tourists in Nepal will increase at an estimated rate (annual) of 40 per cent for the next five years. The number of tourists visiting this country is likely to increase if hotel facilities are made available, along with greater ease of air travel in the main places of the kingdom.

TABLE 116

(Rs. in million)

Fiscal Year	Number of Tourists	Earning of Foreign exchange
1970-71	49,000	19.6
1971-72	68,000	26.0
1972-73	95,000	36.5
1973-74	1,30,000	50.0
1974-75	1,80,000	70.1

According to Table 116, it could be stated that, if foreign exchange earnings increase by 40 per cent annually, corresponding to the annual increase in the number of tourists, the amount of foreign exchange as estimated in the above mentioned Table could be earned. Also, the earning of foreign exchange might will increase even if there were no considerable increase in the number of tourists.

If it were possible to lengthen the stay of tourists in Nepal, the earnings from tourism could be increased even if the number of tourists visiting Nepal were not be increased considerably. According to the Tourism Development Plan, it is obvious that it would take longer for tourists to look around if new tourists attractions in different places could be developed This would result in longer stays, leading to increased spending by them and increased foreign exchange earnings by Nepal.

As envisaged in the current Tourist Development Plan, the duration of stay of tourists in Nepal would be increased from an average of 3 days, at present to 5 days by the establishment of hotels in Pokhara, Lumbini and Namche Bazar. As tourists have also been to some extent responsible for activating black market activities, additional amounts of foreign exchange would likely to be earned if vigorous attempt were made to control black market activities. Thus, it could be assumed that a foreign currency equivalent of Rs. 80 to 90 million could be earned in the last year of the Fourth Plan if the number of days of an average tourists' stay in Nepal could be increased alongwith the increase in the number of tourists.

Since more than 80 per cent of tourists visiting Nepal come via air routes, an aviation development programme would be an important one for the development of tourism during the Fourth Plan period. As jumbo jets are scheduled to fly via India in the begining of the first year of the Plan period, it has become essential to make special improvements in the current services in order to provide facilities for the largest possible number of tourists to visit Nepal. For this purpose, Kathmandu Airport will be further expanded and a 10,000 ft. runway will be constructed, as well as other necessary facilities to allow larger aircrafts to land.

As Kathmandu's weather is sometimes unsuitable for landing of aircrafts. Simra Airport would be equipped with modern facilities, including the construction of a new 7,500 ft. runway. This would help to bring more tourists in Nepal. Other airports which receive improved facilities are Pokhara and Bhairahawa. These new facilities would help to lengthen the duration of tourist stay in Nepal because of the picturesque Pokhara Valley and Lumbini, the birthplace of Buddha (situated near Bhairahawa).

It is necessary to increase the number of hotels of varying standards available to tourists visiting Nepal during the Plan period. In accordance with the programme of airport construction and the policy of lengthening the duration of visits of tourists in Nepal, it has become more essential to build modern hotels in places other than Kathmandu Valley.

In the Plan period, hotels with different standards would be established in Kathmandu Valley, making a total of 2600 hotel beds (600 beds in 4 and 5 stars, 1200 beds in 3 star and 500 beds in 2 star). Arrangements would also be made to set up hotels of different standards with a total of 460 hotel beds in different places outside the Valley. Because of this, the number of tourists from India would also increase due to increased hotel and transportation facilities in different parts of the kingdom. The construction of the Bhairahawa-Lumbini Road would also be completed during the Plan period, and the Lumbini Region would be developed.

The following programmes will be implemented by the Department of Tourism in the coming five years:

1. Master Plan for the development of Tourism

The formulation of a long-term master Plan for the development of tourism in Nepal and the implementation of development projects in accordance with this Plan has been begun after a systematic detailed study of tourism development. This plan would deal with serveral aspects of the development of tourism: assuring improvement in sites with tourist attraction, managing facilities in such places (i.e. transportation and hotels), and providing necessary publicity to attract tourists to Nepal. Services of foreign experts shall also be utilized in drafting the master plan experiended with the view to make tourism projects function more effectively in the future. It is expected that the report dealing with the above mentioned master plan would be made available by the first year of the Fourth Plan. Several new projects would be included in the master plan on the basis of the report, and obviously these would be implemented during the Plan

period. As it is not possible at this time to determine which of these projects will be implemented in the public sector and the level of investment which will be required by such projects, additional resources will be allocated after the preparation of the master plan for the development of tourism.

2. Publicity and Advertisement

In accordance with the policy of increasing the number of tourists visiting Nepal annually, a programme has been included to increase publicity of Nepal on the international level.

Places in Nepal with archeological, religious and cultural importance, as well as other places worth visiting, will be publicized by means of books, posters, movies, tours advertisement and international seminars and conferences. A photographic laboratory will also be established which should be helpful in this respect.

Since it is necessary to have more attractive posters, photos and movies and to discover new trekking routes in different parts of the country will be surveyed by the staff of the Department for the purpose of obtaining the necessary information and photographs for publicity.

3. Extension of Information Centres

Existing information centres which have been established by this Department to provide information to tourists visiting the country will be extended, and the services of receptionists well-versed in different foreign languages will be made available. Information Centres will also be set up in Birgunj and Pokhara.

4. Development of Tourist Centres outside Kahmandu Valley

Since only Kathmandu Valley and to a certain extent Pokhara have been developed as tourist centres, the private sector has provided sightseeing, transportation, and hotel facilities so that tourists may also see the forest and wild-life at Meghauli in Chitwan District during the Third Plan period. During the Fourth Plan period, facilities would be provided by the Government to the private sector to set up tourist centres at Khumjung in Solukhumbu District and two other places. These centres would be equipped with entertainment, hotel, and transportation facilities.

5. Training

About 150 people would be given professional guide training during this period. Training on the management of primary and middle class hotel and restaurants will also be given.

6. Entertainment

It is necessary to provide entertainment facilities for tourists. Steps will be taken in cooperation with the Department of Culture to start programmes based on Nepalese art and culture for this purpose. A permanent exhibition 'Costume of Nepal' will also be opened.

TABLE 117

ESTIMATED EXPENDITURE

	(Rs in Million)
1. Master Plan of Tourism Development	0.900
2. Publicity and Advertisement	3.776
3. Development of Tourist Centres outside Kathmandu Valley	—
4. Extension of Information Centres	0.114
5. Training	0.100
6. Entertainment	0.110
Total	Rs. 5 million

CHAPTER XIX

GEOLOGICAL SURVEY & MINING

Agriculture, forest and mineral resources are the raw materials essential for the industrial development of the country. Of these three natural resources, investment, time, technical knowledge, and experience are required to a great extent in the development of mineral resources. Instances in several countries have been observed when a major contribution to the economy has been through mineral resources which were able to earn large amounts of money. The important reasons responsible for the lack of proper development of mineral resources in Nepal have been the very small and unplanned amount of investment made in this sector, and the lack of expert technical manpower, and the capacity to use modern equipments in mineral exploration. The proper development of mineral resources of the country would help the industrialization and in the earning foreign exchange could be increased by exporting it as raw materal to abroad.

Progress to date

Although mineral exploration in Nepal was started during the Rana regime, it was not until the beginning of the First Five Year Plan period that it was done in a planned manner. However, no remarkable progress has yet been made in this field. During the First Plan period, a sum of Rs. 5 million was allocated for work in mineral exploration. American and Indian assistance were made available for this purpose. As stated in the Plan, some mineral deposits were discovered, survey work was undertaken and work was soon to begin on those deposits. Possible excavation sites of limestone, iron of Phulchoki and mica were found in an area north of Kathmandu. In addition, after a study of the grade and quantity of the deposits, all necessary arrangements were to be made so that the excavation of minerals could be started. The expenditure of the First Plan period amouted to Rs. 1.9 million. Among its achievements was the discovery of mineral deposits 'worthy of being developed', including iron ore deposits of Phulchoki, Labdi and Those, copper deposits at Wapsa and Arkhaula, gold on the banks of the Ridi river, and slate deposits at Bandipur. Also, deposits of nickel, cobalt, graphite, gypsum, salt, beryl, and petroleum were discovered. The construction of the building of the Bureau of Mines at Lainchaur was almost completed during this period. No progress worth

mentioning was made regarding the 'starting in the near future of exploitation of deposits which have already been discovered' or even of the 'making of all necessary arrangements before starting exploitation' as was envisaged in the First Plan.

During the Second Plan, the development of mineral resources was included with the survey of other natural resources, such as forest, soil, and hydropower. The target of the Second Plan was not as ambitious as that of the First Plan with regard to mineral development. It was planned to undertake a detailed survey of different mineral resources, including preinvestment surveys of the more promising ones, and the establishment of a minerals laboratory. Under 'detailed survey', copper deposits at Kulekhani, Nangre Bhorle, Samar Bhamar, Nata, Darling and Tamghas; cobalt and nickel deposits at Arkhaule; gas, lignite and groundwater in the Kathmandu Valley; marble deposits at Godavari and placer gold on the Banks of Kali Gandaki were to be examined. On the other hand, iron deposits at Phulchoki, Labdi and Those; copper deposits at Baglung, and mica deposits at East No. 1 and West No. 1 districts were included for the preinvestment survey.

A sum of Rs. 1.3 million was spent for the development of mineral resources during the Second Plan period. The achievements of this Plan period were the completion of construction of the building and laboratory of the Bureau of Mines at Lainchaur, the investigation for petroleum in Dailekh and Surkhet districts, the geological survey of 1,000 square miles, the completion of a preliminary survey of mica deposits at East No. 1 and East No. 2 districts, and the discovery of new mineral deposits at several different places.

During the Third Plan, Rs. 20 million was allocated for the development of mineral resources. A geological survey was to be given top priority during this period. This survey was to be undertaken in search of the basic minerals essential for industrial development. Among its targets were a pre-investment survey of Phulchoki iron ore deposits; a detailed survey of copper deposits at Bandipur, Ilam and East No. 1 and preliminary work in the commercial exploration of the most profitable copper deposits; an investigation for gold on the banks of Kali Gandaki and Rapti rivers; a detailed survey of mica deposits at East No. 1 and West No. 1 in order to start commercial production; a survey of the possiblity of oil and gas at Piuthan and Chisapani; and a feasibility study of industries based on mineral resources. Until the second year of the Third Plan, work regarding geological surveys and mines was being undertaken by the Bureau of Mines. It was, however, decided to set up a separate Geological Survey Department, thereby making the two departments responsible for the development of mineral resources. A detailed survey of limestone deposits at Bhainse and Chobar, magnesite deposits at Kamphughat, Kharidhunga phyrite at Beringkhola and Karrakhola in Hetauda was completed in the Third Plan by the Bureau of Mines. Placer gold in Marsyangdi and Seti rivers, brine at Lamjung, pegmatite and mica at Lamjung and semi-precious stones in Sankhuwa Sabha district were also investigated. In the same way, preliminary studies were made concerning the possible production of dead

burnt magnesite and fused magnesium phosphate from the Kharidhunga magnesite deposits, glass from Karrakhola sand deposit, and sulphur and sulpheric acid from the pyrite deposits at Bering Khola. Because the first cement factory to be set up in the country was to utilize limestone deposite from Chobar, detailed investigation work on the Bhainse limestone deposit was discontinued. Since the magnesite deposit of Kampughat turned out to be a low grade one, the detailed survey of magnesite deposit of Kharidhunga has been continued and will be completed by the first year of the Fourth Plan period. A detailed investigation of lead and zinc deposits of Ganesh Himal is being conducted by a private foreign company under the Nepal Mines Act. It is estimated that 0.25 million tons of 'Proved' and 1.5 million tons of 'Semi-proved' 8 per cent ore have been discovered by the end of the Third Plan. The Geological Survey Department did regional mapping of 8,500 sq. miles of different zones including Mahakali, Seti, Gandaki and Lumbini as well as reconnaissance mapping of 3,000 sq. miles. In addition, preliminary surveys were done of copper deposits at Siddhikhani. Ilam, Wapsa Khani in Solukhumbu, pegmatite deposits north of Kathmandu, and phosphate deposits at different places.

During the preceeding three plan periods, more attention was devoted to attempts to discover new mineral deposit in different areas of the country, rather than to detailed planned investigations of deposits already discovered in different geographic regions of the country. Consequently, it was not possible to get detailed results on most of the deposits. It could be said that no detailed investigation and evaluation of mineral deposits could be undertaken because of a lack of trained manpower, unequipped laboratory facilities, and a program which was inconsistant with the targets. Similarly, the geological survey was done in a scattered and unplanned way, sometimes resulting in duplication and sometimes in no work at all being done.

Fourth Plan

The objectives of the geological survey are the preparation of geological maps, the systematic exploration and investigation of the mineral resources of the country and the publication of geological data after their collection. In accordance with the implementation policy of the Fourth Plan period, priority will be given to areas found to be most feasible on the basis of previous studies. Intensive investigation will be limited to those areas which have been given top priority. The operational objectives regarding minerals are to conduct the necessary investigation and analysis of mineral resources of Nepal after a thorough study is done with respect to grade and quantity, to make feasibility studies of mineral industries, to co-operate in the working of such industries and to increase the national income by the development of such industries. In order to implement these operational objectives of the Fourth Plan, preliminary investigation will be conducted on sites found to be feasible by the Geological Survey. In addition, emphasis will be given to the preparation of reports on the mineral deposits found to be feasible by those of preliminary surveys done so far and to the preparation of a study concerning the industrial utilization of mineral deposits.

As surveys and studies in many areas with limited resources are not likely to result in solid achievements, the Fourth Plan will try to make the programmes of the Geological Survey and the Bureau of Mines more ambitious than previous plans, as well as try to implement objectives with concrete projects. Attempts will also be made to reach definite conclusions on the feasibility of different projects involving investigation of mineral deposits. The tradition of continually including investigation unfeasible projects in different plans will be abandoned. The foreign technical assistance essential for the implementation of projects will be secured. In addition, modern equipments will be imported in order to adopt new techniques in geological survey and mineral investigations and to expand the laboratory. It is hoped that increased investment and efforts in the development of mineral resources during the Fourth Plan period will result in some concreate achievements which will be helpful in the industrialization and development of the country. It has also become essential to coordinate to the maximum possible extent the programmes and operations of the two departments involved (i.e. Geological Survey and Survey, and the detailed Geological-Mineral Survey under integrated Geoloeffective. A separate temporary project office utilizing foreign technical personnel will be responsible for the implementation of Aeromagnetic Sprvey, and the detailed Geological-Mineral Survey under integrated Geological Minerals Investigation. Although the Geological Survey will be primarily responsible for this, the cooperation of the Bureau of Mines will also be sought.

A. Geological Survey:

1. Western Terai (Koilabas-Nepalgunj) Petroleum Investigation:

In the context of investigation for petroleum in the Western Terai area between Koilabas and Nepalgunj, exploratory drilling will be done as well as geophysical, magnetic and seismic studies. This area has been considered to be the most probable site for the discovery of petroleum in Nepal. This view is also shared by United Nations specialists who have visited Nepal. Preference will, therefore, be given to drilling in this area. If petroleum were discovered the surplus production could be exported to foreign countries. This could thus make a heavy impact upon the national economy. Rs. 24 million will be spent for this purpose during the Plan period.

2. Arrangement of Preliminary Investigation for Petroleum in Western Terai (Nepalgunj-Dhangadhi):

According to the specialists, the area between Nepalgunj and Dhangadhi is worth investigating, although there is less likelihood of discovering petroleum in this area than between Koilabas and Nepalgunj. With regard to progress made in the search for petroleum in the Koilabas-Nepalgunj area, preliminary work will be done on this project.

3. Gas Investigation in Kathmandu Valley:

The fuel problem in Kathmandu Valley could be partially solved if a gas reservoir could be located. Even at the present time, limited amounts of gas are being utilized as fuel. The equipment made available for this programme could be utilized for other projects as well. A geophysical survey and exploratory drilling will be conducted for this purpose.

4. Phosphate Exploration:

Exploration for phosphatic rocks will be done in Lumbini, Seti and Mahakali zones. The discovery of phosphate rocks could be helpful in the development of agriculture, as it is utilized in the manufacture of fertilizers.

5. Regional Mapping:

Under this project, detailed surface geological surveys of different places Rapti, Bheri, Karnali and Dhaulagiri zones will be conducted. Since it deals with the preparation of a detailed geological map of the country, it could be considered to be a 'basic' for the development of mineral resources.

6. Reconnaissance Mapping:

Under this project, 'through Scale' geological mapping will be done in different places in Sagarmatha, Kosi, Mahakali and Seti zones. Surveying of this kind will provide a base for detailed geological mapping at a later time.

7. Other Detailed Geological Survey:

Deposits found to be promising on the basis of geological survey (e.g. phosphate at Dharan) will be further investigated in detail in order to utilize them as soon as possible.

8. Research and Preparation of Reports:

Various equipments necessary for use in the laboratory will be made available under this project. In order to increase the utility of data and samples collected in the field in the context of geological survey work, it is necessary to study them in detail in the laboratory with various equipments. This project is important since a laboratory equipped with modern equipments is a 'must for the successful implementation of any geological survey.

B. Integrated Geological-Mineral Survey

1. Aeromagnetic Survey of Nepal

An aeromagnetic survey of about 128,000 sq. km. (50,000 sq. miles) of territory in different parts of Nepal will be conducted on contract. Detection of mineral deposits from the surface level alone is often time consuming and neither systematic nor practical.

The magnetic anomoly obtained with the help of an aeromagnetic survey aids in the detection of the presence of iron, lead, copper and zinc deposits. On the basis of such anomolies it is easy to conduct surface exploration in a systematic manner and to give priorities to different areas for further work. Such detailed mineral exploration and investigations will be conducted at some selected localities. After the preparation of an aeromagnetic map of the country, foreign mining companies might be expected to conduct detailed exploration of mineral resources in different parts of the country.

2. Detailed Geological-Mineral Exploration of Deposits in Western Nepal:

Under this programme, 25,000 sq. Km. of territory in Gandaki, Dhaulargiri and Lumbini zones will be studied in detail by integrating geological-physical and geochemical methods. As the well-known old copper deposits of Baglung, Okharbot and vicinity are located in this area, it will be easier, to study the density of deposits, including those deep beneath the earth.

3. Preliminary Work on Detailed Geological-Mineral Exploration of Deposits in Eastern Nepal:

This is similar to the project envisaged for Western Nepal. Under this Project, preliminary work on the investigation of mineral resources will be conducted by integrating geological, geophysical and geochemical methods.

C. Projects Regarding Detailed Investigation of Mineral Deposits and Feasibility Studies

1. Detailed Investigation of Kharidhunga (Sindhupalchok District) Magnesite Deposit:

It was estimated after the initial phase of detailed exploration, that 1,000 million tons of magnesite ore (both low and high grade) were present in the deposit. The work of 'proving' 10 million tons of high grade ore had mostly been completed during the Third Plan period and the remainder will be completed during the first year of the Fourth Plan period. Dead burnt magnesite to be used for export and for F. N. P. fertilizer for home consumption can be produced from high grade magnesite.

2. Detailed Exploration of Copper Deposits of Bhutkhola (Tanahu District and Gyaji (Gorkha District):

In the first stage, both deposits will undergo detailed exploration by an application of geological, geophysical and geochemical methods. The deposit found to be most feasible on the basis of the initial exploration will be further investigated, and the grade and quantity of ore will be estimated.

3. Detailed Exploration of Chemical Grade Limestone (Mahabharat Range)

The occurance of chemical grade limestone will be explored in the limestone quarries of Mahabharat Range, and grade and quantity of the deposits discovered will be estimated. Chemical grade limestone is uesd for the manufacture of glass, calcium cynacide (hetrogenous fertilizer), and in the production of sugar.

4. Exploration of Pegmatite in Northern Nepal:

Pegmatite found in different localities in Northern Nepal will be investigated in detail under this project. Until now, the investigation of pegmatite had not been carried systematically and has been done solely to obtain mica. The proposed project will explore pegmatite, especially in view of the possibility of discovering several other metallic and non-metallic minerals generally associated with pegmatite. It is essential to utilize the services of foreign specialists in the project because of their knowledge and experience.

5. Detailed Exploration of Copper Deposits of Wapsa Khani (Solukhmbu District) and Siddhi Khani (Ilam District):

After a review of studies made already by Geological Survey, a detailed exploration will be done on these deposits by applying geological, geophysical and geochemical methods. A detailed investigation will follow in one of the two deposits found to be more feasible, and estimates of the grade and quantity of ore will be made.

6. Detailed Investigation of Cement Grade Limestone at Bhainse Dobhan (Makwanpur District):

It has been estimated that there are 8.9 million tons of 'proved' and 'semi-proved' cement grade limestone at Bhainse Dhoban in Makwanpur district. After it was decided to establish the first cement factory in Nepal (annual capacity 60,000 tons) at Chobhar in Kathmandu Valley, investigation at this site was postponed. As it is estimated that the annual cement requirement of Nepal will be 60,000 tons by the year 1974-75, it will be necessary to set up an additional cement factory in Nepal. In order to meet this prospective demand, a detailed investigation will be undertaken to prove at least 10 million tons of cement grade limestone at Bhainse, and also to make the necessary soil survey.

7. Detailed Investigation of Phosphate Rock Deposits:

Phosphate rock deposits which are discovered by the Geological Survey Department will be investigated in detail under this project. This will include the determination of grade and quantity. It is an essential project because phosphate rock is essential in establishing a fertilizer industry. Also a deposit of economic grade and quantity may be exportable, thereby earning valuable foreign exchange.

8. Exploration of Miscellaneous Deposits:

Under this project, detailed investigation of deposits already discovered (such as copper from Baglung, Okharabot and Rukumkot) and of other metallic and non-metallic deposits which might be discovered later and which are found to be promising on the basis of preliminary investigation will be further explored.

9. Field Equipment and Machinery:

Equipment necessary for field work, i.e. heavy and light drill machine (with auxilaries), handdrill, compressors, trucks, jeeps, survey and geophysical equipment, and camping equipment, will be made available under this project. As it is not possible to conduct any detailed mineral exploration effectively without this equipment and machinery, this project is an important and unseparable part of the detailed exploration programme of mineral resources.

10. Laboratory and Research:

This is a kind of 'service project' which includes setting up reinforcing or expanding chemical, mineral, ore dressing, and physical testing laboratories; drafting, duplicating and photo services; repair shops, and a mineral museum and library. As no work dealing with the development of mineral resources could be implemented successfully without well equipped laboratories and research facilities, this is an essential and important project.

11. Feasibility Study of Mineral Based Industries:

Feasibility studies of the following mineral-based industries will be done under this project:

(a) Feasibility study of those industries based upon the magnesite deposit of Kharidhunga and the cement industry based upon the limestone deposit of Bhainse.

(b) Reviews of the iron and steel industry based upon the iron ore deposits of Phulchoki, the glass industry based upon Karrakhola deposits in Hetauda, the utilization of pyrite deposits at Bering Khola and the nitrogenous fertilizer industry.

(c) Feasibility studies of paint, building stone, marble, concrete products, lime (small scale), ceramic, pesticide and fertilizer blading industries.

(d) Feasibility study of newly discovered deposits (i.e., the industrial utilization of phosphate). This will be done in different stages and coordinated with the detailed investigation of related mineral deposits. As soon as proper technical and economic justification is established by the Department on the basis of preliminary study in the first stage, the services of qualified and experienced foreign consultants will be made available for a detailed feasibility study.

12. Technical Assistance to Industries in Private Sector:

Under this project, technical advice will be made available to small scale mining industries in the private sector. There have as reductions in production, damage to roads and forests and danger to accidents in the private sector mining industry because of a lack of expert technical advice in Nepal.

TABLE 118

ESTIMATED INVESTMENT FOR GEOLOGICAL SURVEY AND MINING DEVELOPMENT

Estimated Amount Rupees in millions

a. Geological Survey:		**39.9**
1. Western Terai (Koilabas-Nepalgunj) Petroleum Investigation	24.0	
2. Western Terai (Dhangadhi-Nepalgunj) Preliminary Petroleum Prospecting	0.2	
3. Gas Investigation in Kathmandu Valley	5.0	
4. Phosphate Exploraton	0.25	
5. Regional Mapping	1.2	
6. Reconnaissance Mapping	0.25	
7. Other detailed geological survey	4.0	
8. Research and Preparation of Reports	5.0	
b. Integrated Geological Minerals Survey:		**22.7**
1. Aeromagnetic survey of Nepal	12.5	
2. Detailed geological mineral in western Nepal	10.0	
3. Preliminary work on detailed geological mineral explration of deposits in eastern Nepal	.2	
c. Projects Regarding Detailed Investigation of Mineral Deposits and Feasibility Studies:		**11.9**
1. Detailed investigation of Kharidungha (Sindhupalchok district) Magnesite deposit	0.15	
2. Detailed exploration of copper deposits of Bhutkhola (Tanahu district)and Gyai (Gorkha district)	0.35	
3. Detailed exploration of chemical grade limestone in Mahabharat range	.02	
4. Exploration of pegmatite in northern Nepal	1.0	
5. Detailed exploration of copper deposits of Wapsa Khani (Solokhumbhu district) and Siddhi Khani (Ilam district)	0.6	
6. Detailed investigaion of cement grade limestone at Bhainse Dobhan (Makwanpur district)	0.05	
7. Detailed investigation of phosphate rock deposits	0.2	
8. Exploration of miscellaneous deposits	0.6	
9. Field equipments and machinery	2.0	
10. Laboratory and research	4.6	
11. Feasibility study of mineral based industries	2.05	
12. Technical assistance to mineral based industries	0.1	
Grand Total		**Rs. 74.5**

CHAPTER XX

POWER

Electricity occupies an important place in the development of the national economy. It is essential for industrialization, agricultural development, and for the development of other sectors. Hydro-electricity is one of the most economical sources of power in Nepal because of its abundance. Its potentiality is estimated to be 80 million kilowatts. Inspite of this, the total hydro power generated so far has been insignificant. Compared to the demand, only small hydro-power development have been undertaken so far. This results in the high cost and low consumption of electrical power. Keeping in view the development of different sectors, it can be said that in future, this important source of energy will be harnessed gradually.

Progress to Date

Before the commencement of the First Plan, total power generation in Nepal was 6280 Kw., out of which hydel power was 2077 Kw.

In the First Plan, through the execution of hydro-electric projects in Trisuli, Thadokhola, Panauti, Seti, Tinau, and other rivers the target for power development was fixed to be 20,000 kw. For this purpose, Rupees 30 million (9 per cent of the Plan outlay) was allocated. Though some work was done on some projects in the First Plan, only Teku and Bhaktapur diesel stations were established, generating only 970 Kw. of additional power. In addition, a preliminary survey of the Karnali, Kali-River and Kathmandu-Hetauda-Birgunj transmission line was conducted. In the First Plan, no progress was made in electrical power development in comparison to the targets. In the interim year between the Fisrt and the Second Plan, 1056 Kw of diesel power were made available. The target for the Second Plan (Three Year) was 22,000 Kw of additional power, and the monetary allocation was 91 million rupees. During the Plan period, Panauti project, Thadokhola project, Trisuli project and other hydro electric projects were to be undertaken; and in Hetauda, Birgunj, Nepalgunj and Biratnagar, diesel installations with a capacity of over 10,000 Kw were to be established. In addition, four small diesel installations, four small Hydel projects (Micro-plants), and the Kathmandu-Birgunj 66 Kv transmission line were to be constructed. In the Second Plan period, Panauti project with a capacity of 2400 Kw, Patan diesel plant with a capacity of 1470 Kw, and Birgunj

diesel plant with a capacity of 560 Kw were brought into operation. In addition to this, construction on the Kathmandu-Birgunj transmission line was started, and the Sunkosi and Karnali project surveys were continued.

In the Third Plan it was proposed to increase the generated power by 60,000 Kw, and Rupees 260 million or 15 percent of Plan outlay, were allocated for this purpose. The targets for the Plan period were to generate 18,000 Kw at Trisuli, 10,000 Kw at Gandaki, and 7500 Kw. at Kosi; to conduct detailed surveys of Marsyangdi, Kali and Kulekhani to select the most economical for execution of a project thereby adding 18,000 Kw of power; to complete the construction of Kathmandu-Hetauda-Birgunj 66 Kv transmission line, to complete the survey of Gandak-Bhairahawa—Butwal and Gandak-Hetauda transmission lines; to conduct the survey of Kankai project; to electrify Jhapa, Ilam, Rajbiraj with small diesel plants; and to complete construction and survey work of Karnali. Later, the revised Third Plan fixed the target of increased power capacity to 36,000 Kw or 60 per cent of the original target of 60,000 Kw. The Sunkosi hydel project, the Gandak project, and the Gandak-Hetauda and Gandak-Bhairahawa transmission line construction were scheduled for this Plan period. The Sunkosi-Ramechhap-Udaipur-Garhi-Janakpur transmission line project was referred to in this plan.

By the middle of the Third Plan, the total supply of power has been increased by 19,960 Kw, primarily from Trisuli project (12,000 Kw), from Pokhara hydel project (1000 Kw), from Hetauda Diesel station (4470 Kw.), and from Patan and Biratnagar diesel installations (2490 Kw). The revised Third Plan targets have not been completely fulfilled becaused the Kosi and Trisuli projects could not deliver power as scheduled. In this Plan period, construction work was started on the Sunkosi project and the small hydel project at Dhankuta. The Kathmandu-Birgunj 66 Kv transmission line is almost complete, and construction of the Dharan-Dube transmission line has been started. The survey work in Kulekhani project was completed, and survey work for Kankai project is being continued. Kosi power was made available to Rajbiraj and the electrification of Janakpur, Bharatpur and Bhairahawa was started. In different hilly areas, surveys were conducted for small hydro-power projects (micro-plants).

Considering the power development schemes so far executed, the achievements during the First Plan period were insignificant. The targets fixed for the First Plan were highly ambitious, and the technical and economic feasibility studies for most of the projects had not been done. In the Second and Third Plan progress can be said to be satisfactory compared to the original targets. In these two Plan periods, the achievement of targets has been short due to the non-availability of power from projects like Trisuli, Kosi and Gandak.

Fourth Plan

In Nepal the objectives of power development are to make power available for the development of national economy by utilising the water resources; to make power available in urban and rural areas, thereby helping in the development of agriculture and industry; and to utilize water resources properly in order to increase national income. In order to fulfill these objectives, the following policy will be followed in the Fourth Plan.

In Bagmati and Narayani zones during the first half of the Plan period, power generation will exceed demand. Hence priority will be given to transmission and network improvements in order to increase the consumption of power for industrial, agricultural and domestic purposes. By the end of the Plan, power consumption in this area will increase. Therefore, in the fifth year of the Plan, construction work in Kulekhani project will be started. In order to increase consumption of power while considering the domestic fuel problems, the imposition of a power tariff would be made more practical. In order to fulfill the power demand of the industrial area of the Eastern Terai, construction of Kankai hydel project will be undertaken in this Plan period, as well as making power available from the Kosi project. Since the execution of a big project like Karnali in the near future does not seem likely, the construction of a medium sized hydel project like Babai will be undertaken to meet increasing domestic and industrial demand in the western Terai. In order to increase the consumption of generated power, transmission lines will be constructed. Demand in those Terai areas away from hydel power project sites will be met by diesel installations, and pending other arrangements, by buying power from India. Only after completely utilising the stand-by diesel sets from Bagmati and Narayani zones, new diesel power plants involving foreign exchange will be imported from abroad. In the hilly areas, two small hydro power plants (micro-plants) will be constructed (one in the West and one in the Far West). Construction of a small hydro-power plant was started during the Third Plan at Dhankuta in eastern Nepal. At the end of the Fourth Plan period, efforts will be made to make power available in at least at one place in 12 of the 14 zones in the country.

In the Fourth Plan period, a total of 40,300 Kw of power will be generated as follows: Trisuli (additional) 9000 Kw, Sunkosi 10,000 Kw, Gandak 10,000 Kw, Kosi 6,800 Kw, diesel installations 4,000 Kw, and small hydel projects 500 Kw (including Dhankuta). The importance attached to power development in the Plan is reflected by the fact that construction on projects like Kankai, Babai and Kulekhani, which have a combined capacity of 68,000 Kw., will be started in the Fourth Plan period.Since the technical and economic studies of the projects included in the Plan (as well as the load forecasts) have been more reliable, it can be expected that the difference between targets and achievements during the Plan period will not be much. It can be said that the projects included in the Plan will be successfully implemented. The new projects which will be started in this Plan period are Kankai, Babai and Kulekhani. In the eastern part of the country, Biratnagar has become a foremost industrial area, but the power supply there has been in shortage and expensive. It is estimated that the power demand by 1975 will be over 11,000 Kw and by 1980, about 20,000 Kw. It will be met by inexpensive power from Kankai. The Babai project in Nepalgunj area will be initiated in the Fourth Plan to meet the demand of that area in the Fifth Plan period. In Bagmati and Narayani zones, the power generation capacity will be 36,540 by 1976 and the peak load demand by 1977 will be 38,400 Kw. Therefore, the Kulekhani Hydel Project will be started in the final year of the Plan.

During the Fourth Plan period, the power development projects are

divided into five categories as follows: construction, transmission line, small hydel projects, diesel installations, and survey. The detailed description of the projects included in these five categories are as follows;

A. Construction

1. Sunkosi Hydel Project

This project has been continuing since the Third Plan period. 10,000 Kw of power will be generated by the construction of a dam on the Sunkosi river and 57 kilometer of transmission line will be constructed. It will fulfil the increasing demand of the Kathmandu Valley after its completion in the second year of the Fourth Plan period.

2. Kankai Hydel Project (Multipurpose)

In this project 30,000 Kw of power will be generated by the construction of a 60 meter high dam in the Kankai river of Jhapa district. In addition to power development, irrigation for 46,000 hectares of land will be made available. Of the total cost of Rupees 100 million, 60.5 million will be spent in this Plan period. The project will be completed by the Fiscal Year 1975-76. According to preliminary reports, construction cost per unit will be 52 paisa, and the unit cost of power will be 5 paisa. Power will be made available to the industrial areas of Biratnagar, Ilam and Bhadrapur. Since the demand of this area is mostly industrial, and the demand by 1975 will exceed 11,000 Kw and by 1980, 20,000 Kw, the project will satisfy the demand by making available inexpensive power for industrial and domestic purposes.

3. Babai Hydel Project

Under this project, power will be generated from the Babai River in the western part of the Dang Valley and will be distributed to Nepalgunj and the Dang Valley areas. Due to a lack of arrangements for financing and marketing facilities, construction work on the Karnali Hydel project, may not materialise in the near future. Hence a medium-sized project such as Babai has been undertaken to meet the industrial demand of Nepalgunj and adjoining areas. This project wil be completed in 4 years and the estimated cost will be about Rupees 45 million. During this Plan period Rupees 10 million have been allocated for this project.

4. Kulekhani Hydel Project

Under this project, 32,000 Kw of power will be generated by diverting the water of Kulekhani river through 4250 meter tunnel. The total investment for the project will be Rupees 245 million, the construction cost per unit will be 1.43 rupees, and the cost of generated power per unit will be 13 paisa. In consideration of the domestic and industrial demand of the Bagmati and Narayani zones, construction on this project will start by the final year of the Fourth Plan period and will be completed during the Fifth Plan period.

B. Transmission Lines

1. Gandak-Hetauda 132 Kv Line

10,000 Kw of power from the Gandak project will be made available to Nepal. It has been mentioned in the Gandak project agreement between India and Nepal that the power house in Gandak will be transferred to Nepal when the load factor attains 60 per cent. So long as the load factor does not attain 60 per cent, Nepal has to buy from India the power generated from this project. From this project, power will be distributed to the Chitwan Valley and it will meet the demand in Hetauda, Birgunj and Kathmandu areas.

2. Parasi-Butwal 33 Kv Line

Under this project, power from Gandak project will be brought to Butwal by the construction of a transmission line.

3. Kathmandu Valley Electrification

Under this project, rural areas of Kathmandu Valley will be electrified.

4. Transmission Line For the Kosi Area Electrification

Under this project, power generated in the Kosi project will be brought to Etahari, Inarwa, Rangeli and Dharan areas by the construction of a transmission line. Work on this project was started in the Third Plan period.

5. Kankai-Biratnagar 66 Kv Line

A transmission line will be constructed to transmit power from Kankai to Biratnagar. This project with a total cost of Rupees 11 million will be completed by the Fiscal Year 1975-76.

6. Kankai-Bhadrapur 66 Kv Transmission Line

A transmission line will be constructed to carry power from the Kankai Project to meet the domestic and industrial demands of the Bhadrapur area.

7. Siraha-Janakpur 33 Kv Transmission Line

Under this project, power will be distributed to different areas by the construction of a transmission line between Siraha and Janakpur.

8. Kathmandu-Birgunj 66 Kv Line

This is a continuing project, the last phase of which is the construction of a sub-station, to be completed by the first year of the Fourth Plan period.

9. Pokhara-Khaireni 33 Kv Line

Under this project, power from Pokhara Hydel Project will be transmitted to the agricultural development project at Khairenitar.

C. Small Hydel Project Based on Development Growth Axis

1. Dhankuta

Under this project a small hydel project (240 Kw) construction started at Dhankuta during the Third Plan period will be completed in the Fourth Plan period.

2. Baglung

Under this project, a 150 Kw small hydel power station will be constructed to electrify Baglung and the adjoining areas.

3. Jumla

Under this project, a small hydro-power station to be completed by the Fiscal Year 1973-74 will be constructed in the far west of the country in Jumla.

D. Diesel Power Installations

1. Biratnagar Diesel Station

Under this project, one diesel plant with a capacity of 2980 Kw will be shifted from Hetauda to Biratnagar, and a new diesel plant will be set up at Biratnagar and to distribute power to that area.

2. Bharatpur Diesel Station

Under this project, work will be completed by the second year of the Fourth Plan period to meet the demand of the area until power from the Gandak project is available.

3. Bhairahawa Diesel Station

Under this project, 500 Kw diesel sets will be shifted from Kathmandu to Bhairahawa, and power to meet the deficit will be bought from India and distributed.

4. Krishnanagar Diesel Station

Under this project, a 200 Kw diesel station will be established in Krishnanagar. Distribution to Taulihawa and Krishnanagar will also be completed by receiving power from India.

5. Nepalgunj Diesel Station

To fulfil the demand of power in this area until the Babai project is completed a 500 Kw diesel station will be established by the Fiscal Year 1971/72.

6. Janakpur Diesel Station

Under this project, 500 Kw diesel sets will be shifted from Kathmandu Valley to this area. The electrification of Janakpur will also be carried out by purchasing power from India. This work will be completed by the first year of the Plan period.

7. Fatehpur Diesel Station

Under this project, a 200 Kw diesel station benefitting 4,000 people at Fatehpur in Sagarmatha zone will be established by the first year of the Plan period.

8. Mahendranagar Electrification Project

Under this project, power will be made available to Mahendranagar in Mahakali zone by purchasing it from India. This project will be completed by the second year of the Plan period.

9. Tansen (Palpa) Diesel Station

Under this project, a new 200 Kw diesel station will be established in Tansen Palpa. Since the Sidharth Rajmarga is almost completed, and since this town lies on the growth axis and the development of the town from the view point of tourism is also well recognised, this project will be completed during the first half of the Plan period.

10. Narayani Zone Electrification

Besides completing the Kathmandu-Birgunj Transmission Line, available power will be distributed to Kalaiya, Birgunj, Simra, Parawanipur, Pathlaiya, Sugauli, Jitpur and other places by constructing 11 Kv and 440 Volt Lines.

E. Survey

1. Detailed Survey of Puwa Khola

After the completion of the Kankai Project, generated power will exceed demand in the eastern Terai area for some years. It is essential that a feasibility report of a hydel project should be on hand in order to fulfil the demand of this area after ten years. Therefore, the detailed survey of Puwa Khola is included in the Plan.

2. Detailed Survey of Kali Gandaki (near Deoghat)

A preliminary survey of this project was conducted by experts in 1960. A detailed survey of Kali Gandaki loop near Deoghat will be conducted in order to meet future demand in Palpa, Syangja, Tanahun, Gorkha, Lamjung and other places and to make available power for electrification in Bagmati and Narayani zones.

3. Detailed Survey of Kali Gandaki (near Ridi)

A detailed survey of Kali Gandaki loop near Ridi will be conducted in order to meet the future demand of power in Baglung, Myagdi, Parbat, Gulmi, Arghakhanchi districts, and Pokhara and its adjoining areas.

4. Preliminary Survey of Chamelia river

A preliminary survey of the Chamelia river will be conducted for a medium-sized hydel project which might meet future demand for power in Baitadi, Dadheldura, Darchula, Doti, Kailali and Kanchanpur.

5. Preliminary Survey of Tamur and Arun Rivers

Preliminary survey for a hydel project on the Tamur and Arun rivers will be conducted. This would enable future demand for power in the hilly regions of Mechi, Kosi and Sagarmatha zones, and Biratnagar area to be met.

6. Survey for Small Hydel Projects (Micro-Plants)

Under this project a survey will be conducted in the hilly areas of Nepal regarding the possibility of establishing micro plants.

7. Survey for Narayani-Mechi 132 Kv Transmission Line

A survey of a transmission line from Narayani zone to Mechi zone to connect the different power systems operating in central and eastern Nepal into a single grid will be conducted.

8. Butwal-Pokhara Transmission Line Survey

In order to meet the increasing demand of the adjoining areas and to utilize the power to be available from Kaligandaki in the future, survey will be done for the construction of a Butwal-Pokhara transmission line.

9. Bharabise-Ramechap-Janakpur Transmission Line Survey

A survey will be conducted to transmit the power generated in Sunkosi which has not been consumed in Bagmati and Narayani zones to Janakpur.

10. Unspecified Transmission Line Survey

Under this project, the survey of other essential transmission lines will be conducted keeping in view the demand at different places, as well as the excess power in other areas.

TABLE 119

PROPOSED INVESTMENT IN POWER DEVELOPMENT

(Rs. in million)

A. Construction	
1. Sunkosi Hydel Project	57.5
2. Kankai Hydel Project	65.0
3. Babai Hydel Project	10.0
4. Kulekhani Hydel Project	2.5
Total:	135.0
B. Transmission Line	
1. Gandak-Hetauda 132 Kv Line	30.0
2. Parasi-Butwal 33 Kv Line	3.3
3. Kathmandu Valley Electrification	5.1
4. Transmission Line of Kosi Area Electrification Scheme	3.5
5. Kankai-Biratnagar 66 Kv Line	3.0
6. Kankai Bhadrapur 66 Kv Line	2.5
7. Siraha Janakpur 33 Kv Line	5.0
8. Kathmandu Birgunj 66 Kv Line	1.5
9. Pokhara Khairani 33 Kv Line	1.0
Total	55.0
C. Small Hydel Project (selected on the basis of development growth axis)	
1. Dhankuta	1.1
2. Baglung	1.6
3. Jumla	2.0
Total:	4.7

D. Diesel Power Installations *

1. Biratnagar Diesel Power Installation (one old and one new plant)	4.0
2. Bharatpur Diesel Power Installation (old plant)	0.3
3. Bhairahawa Diesel Power Installation (old plant including distribution)	1.8
4. Krishnanagar Diesel Power Installation (old plant including distribution)	1.9
5. Nepalgunj Diesel Power Installation (old plant including distribution)	2.1
6. Janakpur Diesel Power Installation (old plant including distribution)	2.4
7. Fathepur Diesel Power Installation (new plant)	0.3
8. Mahendranagar Electrification Project	1.4
9. Tansen Palpa Diesel Power Installation (new plant with distribution)	1.0
10. Narayani Zone Electrification	3.0
Total:	18.2

E. Survey

1. Detailed Survey of Puwa Khola Hydel Project (Jhapa)	2.0
2. Detailed Survey of Kali Gandaki (near Deoghat)	2.0
3. Detailed Survey of Kali Gandaki (near Ridi)	2.0
4. Preliminary Survey of Tamur and Arun Rivers	1.0
5. Preliminary Survey of Chamelia River	0.5
6. Survey of Small Hydel Projects (micro plant)	0.4
7. Survey Narayani-Mechi 132 Kv Line	2.5
8. Butwal-Pokhara Transmission Line Survey	0.5
9. Barabise-Ramchhap-Janakpur Transmission Line Survey	0.5
10. Unspecified Transmission Line Survey	1.0
Total:	12.4
Grand Total for Electricity	**225.3**

Appendix 1

APPROXIMATE MAXIMUM DEMAND IN BIRATNAGAR AND ADJOINING AREAS

	Maximum demand in Kw according to Nippon Koei						
Year	Biratnagar	Dharan	Rajbiraj	Dube	Rangele	Total	Power available in kw
1967-68	2265	150	—	—	—	2415	
1968-69	2700	100	—	—	—	2800	
1969-70	3300	200	—	—	—	3500	3000
1970-71	3900	230	330	490	170	5120	
1971-72	4600	260	360	560	200	6000	5980
1972-73	5500	300	440	650	220	7110	

*** Mostly the old sets available in the department will be utilised.**

1973-74	6400	340	500	740	260	8240	8880
1974-75	7500	400	570	850	300	9520	
1975-76	8600	450	660	980	340	11030	
1976-77	9800	520	760	1130	400	12610	
1977-78	11100	600	870	1290	450	14310	
1978-79	12400	690	1000	1490	520	16100	
1979-80	13700	790	1150	1710	600	17950	
1980-81	15100	900	1320	1960	680	19960	

Notes

1. Demand in Ilam area within the next 5 and 10 years will be 200 Kw and 440 Kw respectively. For the same period in Bhadrapur area, the demand will be 700 Kw and 1400 Kw, respectively.
2. 6800 Kw of power will be available from Kosi project. Since this power will be generated from the canal, expert opinion suggests that it will not be available all the time. Heavy silt deposit problem will make it a not very dependable source of power, and it will therefore be complimentary to the diesel generated power.
3. 260 Kw diesel set belonging to Morang Hydro Company, as well 900 Kw diesel and 1400 Kw steam set belonging to Biratnagar Jute Mills are old.
4. The target for Biratnagar is such that 2980 Kw of power from diesel will be available by the Fiscal Year 1971-72, and still 2900 Kw more will be available by the Fiscal Year 1973-74.
5. It is targeted to make available hydel power from Kankai project by the fiscal year 1975/76.

Appendix 2

APPROXIMATE MAXIMUM DEMAND OF KATHMANDU VALLEY AND THE ADJOINING AREAS

Year	Maximum demand according to Nippon Koei in Kw.	Maximum demand according to Nepal Electricity Corp. in Kw.	Power available in Kw.
1969-70	12,600	11,500	15,540
1970-71	14,600	13,700	21,540
1971-72	16,800	16,200	31,540
1972-73	19,100	18,900	36,540
1973-74	21,500	21,900	36,540
1974-75	26,350	25,400	36,540
1975-76	29,200	29,200	36,540
1976-77	32,100	33,600	36,540
1977-78	35,600	38,400	36,540
1978-79	38,890	43,600	36,540
1979-80	42,500	—	—
1980-81	46,300	—	—

Notes

1. The approximate estimates for Kathmandu Valley and adjoining areas made by Nippon Koei include Hetauda, Birgunj area as well as Butwal and Bhairahawa areas.
2. In the approximation made by Nepal Electricity Corporation, Kathmandu Valley and adjoining areas includes in addition to Kathmandu such areas as Banepa, Trisuli etc. which are being supplied by the Corporation now.
3. Available hydel power capacity has been included as provided by the Corporation. According to this approximate estimate, only 5000 Kw out of 10,000 Kw of power from Gandak will be distributed to Kathmandu Valley and adjoining areas. As some of the diesel plants from the Valley will be transferred to Terai areas and some will be left as standby's they are not included in the chart.
4. The construction of Kulekhani project will be started by the Fiscal Year 1974-75.

Appendix 3

APPROXIMATE MAXIMUM DEMAND IN NEPALGUNJ AND ADJOINING AREAS

Year	According to Nippon Koei In Kw	According to Electricity Department		Available power in Kw
		General Demand	Industrial Demand	
1967-68	260	—	—	—
1968-69	—	—	—	—
1969-70	—	—	—	100
1970-71	330	628	—	—
1971-72	400	705	—	—
1972-73	480	845	—	600
1973-74	570	1017	—	—
1974-75	690	1216	4000	—
1975-76	820	1334	—	—
1976-77	960	1472	—	—
1977-78	1130	1619	—	—
1978-79	1320	1741	—	—
1979-80	1510	1959	—	—
1980-81	1740	2167	—	—

Notes

1. According to estimates by Nippon Koei, maximum demand in the first five year period will rise by 20 to 25 per cent annually and after that by 15 to 20 per cent. All the existing industrial demand

at present is not included in this report. In Electricity Department study, the demand of Dang and Sallyan is included.

2. An industrial estate in Nepalgunj will be established in the near future. The demand created by this estate has not been included in estimates. Maximum demand of Balaju Industrial Estate in Kathmandu is about 125 Kw. Since there is the possibility of a paper mill being established in Nepalgunj during the Fourth Plan period, there may be quite a large demand for power
3. 500 Kw of diesel power will be made available in Nepalgunj by the Fiscal Year 1971-72.
4. It is targeted to make available 800 Kw of hydel power from Babai project by the Fiscal Year 1976-77.

CHAPTER XXI (B)

HYDROLOGY AND METEOROLOGY

Hydrological data are indespensible in the successful implementation of any hydro-electric or irrigation projects. No design of the production of hydro-electric power or the area to be irrigated and distribution system of canals could possibly be done without relevant data on the discharge of the stream, including the periodic fluctuations and minimum amount of water to be available. Although the importance of such data seems to be somewhat limited at first glance, it would not be an exaggeration to state that hydrological data is the most fundamental data in any project dealing with the development of water resources. Such data have also been found to be useful in the design of bridges and in the forecasting of floods. By the proper study of data on sedimentation; dams and reservoires could be designed in such a manner that they will control "silting". The utility of meteorological data lies in such divers fields as civil aviation, agriculture, and weather forecasting. The exploration and utilization of ground water resources in a systematic way can result in large scale increases in agricultural production.

Progress to date

The collection and study of hydrological and meteorological data in a systematic manner was not started in Nepal until the beginning of the Second Plan. In the Second Plan, hydrological surveys were included along with soil surveys, forest resources surveys, and mineral surveys. During the Second Plan, 51 stream gauging stations were built and Rs. 2.68 million were spent for hydrological surveying. American Aid was also available from the beginning of Second Plan to the first half of the Third Plan for this purpose. In the Third Plan, Rs. 14 million were allocated for hydrological survey and included in the Plan under a seperate chapter. The target of the Third Plan was to establish 49 stream gauging stations, meteorological stations, a laboratory to analyze the quality of water and sediment samples, to begin weather forecasting, and to assess the possibility of utilizing ground water resources in Kathmandu Valley and the Terai. In the revised version of the Third Plan, it was envisaged to start an extensive exploration for ground water in the western Terai, to continue collecting data on sedimentation, and to start preliminary work on setting up a laboratory.

Among the achievements of the Third Plan, there has been satisfactory progress in establishing hydrological and meteorological stations. Weather forecasting was started during this Plan period. Four booklets consisting of the surface water records of Nepal were published annually. Also, one booklet on climatological records of Nepal was published. But there has been hardly any progress in the collection of data on sedimentation and the interpretative study of this data as envisaged in the Third Plan. No laboratory to analyze the quality of water has yet been established. Preliminary data on ground water resources in the Terai area of Lumbini, Bheri, Seti and Mahakali zones was collected. A detailed exploration of ground water in the Rupandehi district of Lumbini zone (Bhairahawa area) was also started in the final year of the Third Plan with American assistance.

Fourth Plan

The objective of hydrological surveys is to evaluate the water resources of Nepal by collecting data on surface and ground water and making available such data as it is needed in the implementation of development projects in power, drinking water and irrigation. The main objective of the meteorological survey is to make meteorological data (rainfall, temperature, humidity etc) available and to make daily weather forecasts. The following policy will be adopted in order to implement these objectives during the Fourth Plan period. The number of stream gauging stations to collect hydrological data will be further increased as needed on a regional basis. Further emphasis will be put on the interpretative study of hydrological data so far collected. The number of stations for the collection of meteorological data will also be increased, and data thus collected will be studied in an analytical manner.

1. Surface Water Investigation

Under the Fourth Plan, 10 stream gauging stations, 20 crest gauge stations, 10 cable way, 15 automatic recorders, and 15 sediment sampling stations will be established. In addition, maintenance work on 55 stream gauging stations established in the preceeding years will be continued.

2. Meteorological Investigation

Under the Fourth Plan period, 193 additional meteorological stations (for measurement of temperature rainfall etc) will be established in different parts of Nepal, and maintenance work on 70 already existing meteorological stations will be continued. Weather forecasting will be made more reliable.

3. Ground Water Investigation of Terai Portion of Lumbini, Bheri, Seti and Mahakali Zones

Implementation of this project was started in the final year of the Third Plan period with American assistance. Ground water investigation in Nawal-Parasi and Kapilvastu districts of Lumbini zones, Banke and Bardia districts of Bheri zone, Kailali district of Seti zone, and Kanchanpur district of Mahakali zone will be completed in the first phase of the Fourth Plan period. It is hoped that agricultural production in the comparatively

dry western Terai area of Nepal will be increased with the utilization of ground water developed from data collected under this programme with ground water the crops in this area will not have to depend solely upon the monsoon.

4. Preliminary work on Investigation of Ground Water Resources of Chitwan (RaptiValley) and Dang Valley

These two valleys constitute important agricultural areas of Nepal. One of the main problem in this area is a lack of an adequate amount of water for irrigation. A systematic survey of ground water resources of the two valleys will be undertaken and followed by a preliminary investigation at the end of Fourth Plan period.

TABLE 120

ESTIMATED EXPENDITURE IN HYDROLOGY AND METEOROLOGY

	Estimated expenditure (Rs. in million)
1. Surface Water Investigation	6.0
2. Meteorological Survey	4.0
3. Groundwater Investigation of Terai Portion of Lumbini, Bheri, Seti and Mahakali Zones	13.0
4. Survey and Preliminary Investigation of Ground Water Resources of Chitwan (Rapti Valley) and Dang Valley	1.0
Total:	Rs. 24.0

CHAPTER XXII

EDUCATION *

Education plays a very significant role in improving the quality of the population. The primary necessity in the process of education development is the preparation of the educated manpower required for the all round development of the country and the provision of basic minimum education to the masses. The experiences and achievements of earlier plans have made us aware of the need to bring about basic changes in the present education system. But it is not possible to bring about changes in the education system in the short run. It is a long-term continuing process and requires some basic changes. The following targets in various education programmes are set forth in the Fourth Plan, taking these long-term objectives into consideration. It is not possible to achieve the necessary objectives within the Plan period because of limited financial resources. It is hoped that some of the policies adopted in the Fourth Plan will form the basis for future development.

Primary Education

The progress made so far in the field of primary education is very encouraging. The number of primary schools in the kingdom has reached 7,000. About 32 per cent of the primary school-age children have been provided with primary education facilities. Free and compulsory primary education programmes have been introduced in the village panchayats of Chitwan and Jhapa districts and in 107 other village panchayats. Fifteen model primary schools have been set up. However, inspite of this progress, primary education faces a number of problems. First of all, the number of drop-outs is very high, with a tendency for more drop-outs in the lower grades. The quality of teaching has suffered considerably due to an inadequate number of teachers in the schools. The percentage of government aid to the schools reaches a maximum of 93 per cent in some cases, indicating that local resources have not been adequately mobilised. The lack of adequate finance for other education inputs is quite obvious since more than 80 per cent of the revenue is spent on salary.

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* This chapter has been **superseded** by the New National Education system Plan for 1971-76 which has been published separately.

Considering the above facts, HMG has adopted a number of specific policies towards the development of primary education. The target of free and compulsory primary education seems difficult to attain in the near future. The Fourth Plan aims to provide primary education to 45 per cent of the primary school-going age children. To achieve this target, 7000 additional classes and a similar number of teachers will have to be provided. In remote northern regions, it is not practical to establish schools on the basis of population, and special provisions will be made to open 250 classes on the basis of distances between villages.

TABLE 121

PRIMARY SCHOOL STUDENTS AND CLASSES

Year	Total Population	No. of school age children (6-10 years)	Children receiving primary education	Increment in Plan period	Percent of school going age children	No. of classes or teachers
1969-70	1,10,48,000	14,36,000	5,03,000	—	35 %	20,000
1974-75	1,21,56,000	15,80,000	7,11,000	2,08,000	45 %	27,3000

1. Financing of Primary Education

So far, HMG has been providing grants to the primary schools according to the number of teachers. Though the schools spend a major portion of their income on salary, the salary scale of the teachers is very low when compared to other professions. As a result, the schools cannot obtain the services of able teachers, thereby making a great obstacle to the qualitative development of education.

Keeping this in mind, instead of providing grants to the schools, the Government will gradually provide trained teachers whose salaries will be paid directly by the Government. The regular grant would become 40 per cent of the teacher's salary in those schools where trained teachers are not available. The number of trained teachers in the Fourth Plan period would reach 12,300.

2. Building Construction, Education Materials and Curriculum Improvement

Other programmes for the development of primary education, in the Fourth Plan include building construction, provision of education materials to 2000 primary schools, and improvements in curriculum.

3. Scholarships

To meet the shortage of teachers in the northern border regions, scholarships will be provided to the students of those areas to enable them to study in the nearby high schools or training centres.

Secondary Education

There were 22 high and 203 middle schools in the country prior to the year 1951. With the advent of democracy the development of secondary education has been very rapid. By the end of the Third Plan, the

number of high and middle schools is estimated to be 444 and 534 respectively. The secondary school enrolment is now 18 per cent of the primary school enrolment. There has been some improvement in the quality of teaching as a result of the various teacher training programmes organised during the Third Plan period.

The Fourh Plan aims to increase the secondary school enrolment to 20 per cent of the primary school enrolment. As more of the students terminate their studies after secondary education, the need to emphasize the quality of teaching, rather than the quantity has become apparent. Therefore, during the Plan period necessary restrictions will be made concerning the opening up of new schools and emphasis will be given to the consolidation and improvement of the existing ones.

1. Financing of Secondary Education

So far, the Government grant is only 20 per cent of the total expenditure of secondary schools, with the remaining 80 per cent being borne by the public. It has not been possible to run the secondary schools in an organised way, because of limited Government aid. Therefore, instead of the present system of grants, it is proposed to provide 50 per cent of the salary of the secondary school teachers in the form of grants. For this, it is essential that the Education Department make the necessary arrangements for the salary to be paid directly to the teachers.

2. Training in Various Subjects

Intensive training in various fields has been provided to the teachers during the last few years with the objective of making the secondary school teachers more proficient in their subjects. About 1500 additional teachers will be given shor-term training in science, mathematics, english, nepali and social sciences during the Plan period.

3. School Building and Hostels

As 20 per cent of the existing secondary schools do not have their own buildings, it has been difficult to run them effectively. His Majesty's Government will provide grants to build 30 school and 30 hostel buildings during the Plan period. The grants will cover 50 per cent of the total cost of the project.

4. Others

a. With a view to improve the quality of secondary schools, 500 schools will be provided with furniture and education materials.
A model residential secondary school with a high standard of teach- about necessary improvements in the curriculum.
c. Education inspector offices will be strengthened for the regular inspection and guidance of secondary schools.
d. Provision will be made to reward teachers with prizes and other facilities on the basis of their work.

Budhanilkantha School

A model residential secondary school with a high standard of teaching will be established at Budhanilkantha under foreign assistance during

the Fourth Plan. Altogether 470 students will be accomodated in the school, and special provision will be made to secure adequate seats for students coming from outside the Kathmandu Valley.

Secondary Multipurpose Education

Under the present system of education, the requirements of manpower in various vocational areas cannot be met from high school graduates alone. In the absence of vocational knowledge, they cannot be self-supporting and tend to depend on Government jobs. So far,twenty-nine multipurpose schools have been set up to improve this situation. As the operating costs of multipurpose schools is very high, it is not possible to establish a large number of such schools in the near future. Therefore, during the Fourth Plan, only a few additional multipurpose schools will be established, although separate provision will be made to include one vocational subject (in grade 9 and 10) in as many secondary schools as possible.

Adult Education

The adult education programme aims at gradually reducing the rate of illiteracy in the country. During the Third Plan, 1,00,000 adults are expected to become literate, and the literacy rate is expected to reach 11.8 per cent. The programme has received active support from various Class Organisations. The Fourth Plan aims to raise the literacy rate to 15 per cent. Some of this increase will be due to the primary education programme. There are, at present, 37 permanent adult education centres in the country. During the Fourth Plan, these will be further consolidated and improved and 38 additional centres will be opened.

In addition a special work-oriented adult education programme will be started in Chitwan district with UNESCO assistance, and on the basis of the experience in Chitwan, such functional literacy programmes will be expanded in other areas.

Higher Education

Progress in higher education has been mainly in terms of quantity during earlier Plans. In comparision to 29 colleges at the beginning of the Third Plan, the number of colleges at present has reached 40. A high percentage of the high school graduates are enrolled in the colleges with a majority of them taking liberal art subjects. The higher education programme in the Fourth Plan will be formulated with a long-term view to make it qualitative and more practical. Emphasis will be given to vocational oriented education at the secondary level in order to conrol the incerasing trend towards the non-vocational type of higher education. Arrangement will be made to allow the students to enter higher education only on the basis of merit. In order to fulfil the above objectives, the following steps will be taken in the Fourth Plan period:

1. His Majesty's Government will formulate a specific policy on the expansion of higher education.
2. The opening up of new colleges during the Plan period will be generally restricted.

3. Institutions of post S. L. C. standard offering diplomas and degrees in various vocational subjects will be established.
4. An effective policy of science education aimed at facilitating its spread in the colleges will be formulated.

1. Improvement of Colleges

The colleges of Kathmandu Valley seem to attract a large number of students from outside the Valley because of a lack of facilities for various subjects in the colleges outside the Valley. In order to provide better facilities for higher education on a regional basis, five colleges lying outside Kathmandu Valley will be improved to include most faculties and subjects, with laboratory, library and hostel facilities.

The financial aid provided to the colleges will be regulated by enforcing a set criteria on the subjects studied in the college, the number of students, and the general standards.

2. Tribhuvan University

Tribhuvan University, being an autonomous institution, will implement the higher education development programme in the Fourth Plan in accordance with the policy set by His Majesty's Government. His Majesty's Government will provide finances for specific improvements.

Teacher's Training

The quality of education and teaching depends largely on the effeciency of teachers. As a primary step towards improvements in education, it is necessary to increase the number of trained teachers in the primary and secondary schools. During the Plan period, necessary arrangements will be made to provide training to 6500 primary school teachers.

1. College of Education

The College of Education established in the year 1956, provides I. Ed. and B. Ed. training for secondary school teachers. It also has an extension for I. Ed. classes in Birgunj. The College of Education will provide training to 320 secondary school teachers during the Plan period.

2. Laboratory School

A Laboratory School is being operated as a demonstration institution for all the secondary schools of the country. This institution will be further developed.

3. National Vocational Training Centre

The centre gives training in subjects like agriculture, education, home science and industrial trades. The Centre established in 1966, has produced 206 vocational teachers, 375 diploma holders, and 110 persons miscellaneous subjects by the end of Third Plan. During the Fourth Plan a regular two years diploma course training programme has been arranged to train 500 candidates and to prepare them as semi-skilled technicians. In addition, in-service training will be provided to 500 trainees in various vocational subjects.

Physical Education

Various sports events are being organized in various schools and colleges, with the objectives of improving the standard of sports and developing the health of the students and youths. This programme will be implemented more effectively during the Plan period.

To fill the gap of trained instructors in Physical Education in various schools, emphasis will be given to teacher training. A stadium will be constructed. Since no survey has yet been conducted on the activities of physical education in various schools of the kingdom, such survey will also be undertaken.

Examination Improvement Programme

Improvement in the present examination system will be done by formulating long-term and short-term programmes. Steps towards improving the question papers, research on the better methods of conducting examinations, and modern and scientific ways of evaluation will be attempted in this programme. In addition, research will be carried out on various reactions to the examination system.

Science Development

The standard of science education in the primary and secondary schools is very low. Moreover, teaching of science has not been in accordance with the required objectives. The Fourth Plan aims to improve the curriculum, the training of science teachers, the production of scientific and educational equipment and their distribution, in order to make science education in the schools more useful and practical. The improvement of the Science Education Centre located in Harihar Bhawan will be improved in order to execute this programme more effectively.

The glass, metal, wood and eletrical workshops, established to facilitate the repair and maintenance of scientific apparatus as well as the production of some simple apparatus in future, will be better equipped.

A laboratory in the Science Education Centre for teacher training will be established. Training will be provided to 500 secondary and 800 primary school science teachers.

The science education development programme (STEP Programme) will be introduced to 50 middle schools during the Fourth Plan. The text books for the 10th grade and other booklets will be prepared for distribution.

Janak Educational Material Centre

A press room will be constructed and the office building will be extended.

Sanskrit Institute

Necessary arrangements will be made for the establishment of the Central Sanskrit Institute to organize research in Sanskrit by co-ordinating the work of present institutions.

Planning, Statistics, Research Programme

Since educational statistics are of great value for panning, the collection and publishing of various kinds of educational statistics on an annual basis for use by the general public will be continued in the Fourth Plan.

TABLE 122

ESTIMATED EXPENDITURE IN EDUCATION

Projects	Expenditure in Rs
1. Primary Education	41,00,000
2. Secondary Education	1,44,05,500
3. Model School Budhanilakantha	1,00,00,000
4. Secondary Education (Multi-purpose)	1,14,00,770
5. Adult Education	80,00,000
6. Higher Education	2,80,00,000
7. Teacher's Training	2,80,00,000
8. National Vocational Training Centre (including Multi-purpose High School)	1,00,78,065
9. Physical Education	4,68,000
10. Examination Improvement Programme	15,00,000
11. Science Education	25,00,000
12. Janak Educational Materials Centre	5,00,000
13. Sanskrit Institute	5,00,000
14. Planning, Statistics, and Research	3,00,000
Total	11,97,52,335

CHAPTER XXIII
HEALTH SERVICES

The economic and social development of the country is possible only the healthy physical and mental condition of the people. So, the deve- ent of health services has a direct bearing on the economic develop- of a country. The objective of health service development is to make able efficient manpower for the development of the country. The long- objective of His Majesty's Government is to make health services able as widely as possible throughout the country by utilising the able limited economic and technical resources.

Health services programmes under the Fourth Plan can be roughly ed into three main categories. These are preventive measures, cura- services, and health education and training. The Plan has given pri- to preventive measures since prevention of disease is simpler and expensive than cures. In the field of curative services, existing health s will be improved and strengthed. The training programmes consis- mainly of middle level technicians, will concentrate on meeting the easing demand for health personnel.

At present, a number of health projects under the Health Services rtment are running with separate offices and personnel in every ict. Since this arrangement seems too expensive in view of our limited omic and technical resources, the various preventive health projects be unified at the central and lower operational levels.

Pattern of Health Services Programme

onal Health Office

Zonal health offices have been established in Kosi, Janakpur, Nara- , Lumbini and Bheri zones to prepare the health services programme rding to the specific needs of each zone, to provide for the necessary icine, equipment and personnel for the various health programmes in zone, and to bring about proper co-ordination between the preventive curative services in each zone. During the Fourth Plan, two new th offices will be opened in Sagarmatha and Gandaki zones, and the ting offices will be strengthened by providing buildings and other nical facilities.

According to the needs of each zone, 50 to 100 bed hospitals will be provided under the zonal offices, and these zonal hospitals will be consolidated as 'referal' centres to the 25 bed district level hospitals.

b. District Health Office

The district health office aims to extend the health service programme as far as possible in each concerned district. During this Plan period, district level public health offices will be established in the seven zones referred to above.

c. Health Post

The Health Post is the basic unit of health services at the local level. They will be established on the basis of geographical situation, as well as population. The malaria eradication activities in many parts of the Central zone have been completed, but due to the lack of proper health offices, these areas have not been able to reach the maintenance phase. The case is similar in the eastern zone and, to some extent, in the western zone. The Fourth Plan aims to establish health posts at the ratio of 1 to 25,000 people. Besides malaria maintenance activities, these health posts will perform multipurpose activities such as primary medical care, health education, control of other cummunicable diseases, collection of statistics, etc. This will economize on resource utilization by avoiding duplication of health institutions.

About 62,00,000 people of Nepal live in the malarious areas. On the basis of population, some 240 health-posts are necessary to take care of these areas. The number of health-posts in the country was 33 by the end of the Third Plan period. Therefore, the Fourth Plan aims at establishing 200 additional health posts in order to meet the requirement.

Five additional health posts will be established annually to provide basic health services in the hills. Because of transport and communication problems in the mountain region, there will be one health post for every 8,000 to 10,000 person. Thuh, a total of 225 health posts will be established by the end of the Fourth Plan. Personnel for the health posts will be given training according to requirements. In some remote areas where health facilities do not exist, health centres with medical officers will be established with the aim of bringing about coordination between preventive and curative services in the area.

Preventive Health Services

a. Malaria Eradication

By the end of the Third Plan, out of the total population of 6.2 million living in malarious areas in the country, 45 percent has been covered by the 'consolidation phase' and 46 percent has been reached by the 'attack phase'. It was orginally planned to bring 50 percent of the malarious areas of the central and eastern zones into the maintenance phase within the first year of the Fourth Plan. But, in the absence of a basic health infrastructure to take over these activiies, only 10 per cent of the area is expected to enter the maintenance phase by the first year of

the Plan. Depending on the progress in establishing a health infrastructure by the end of the Fourth Plan, 75 per cent of the malarious areas of the country will enter the maintenance phase with 25 per cent taken into the consolidation phase. No area will remain in the attack phase.

b. Leprosy Control

The leprosy control programme is in operation in Bagmati and Narayani zones. During the Fourth Plan, the programme will be extended to Janakpur, Sagarmatha, Kosi, Mechi and Lumbini zones. Under this project, programmes of school-health-activities to discover leprosy cases, population surveys, examinations of germs, the establishment of new treatment centres, and the training of auxiliary health workers will be conducted. Other programmes include the reform of Khokana Leprosarium and the rehabilitation of able leprosy patients.

c. Tuberculosis Control

During the Fourth Plan, a tuberculosis control programme will be continued in Kabre, Sindhupalchok, Nuwakot and Rasuwa districts of the Bangmati zone and Bara and Parsa of the Narayani zones. Training on tuberculosis will be given to the auxiliary workers. The treatment of the tuberculosis patients will be continued intensively.

d. Small-Pox Control

During the Third Plan nearly 5.4 million persons received vaccination against small-pox. In this Plan period, the programme is to vaccinate 80 percent of population and to revaccinate them as necessary in various parts of the country.

e. Family Planning and Maternity and Child Health

The main objective of the family planning programme is to raise the living standard of the general public by bringing about a proper balance between production and population growth. The family planning programme was included in the National Plan for the first time in 1965, and since the fourth year of the Third Plan, this programme has been intensively operated as the Family Planning and Maternity and Child Health Project. During the Third Plan period. 60 F. P. & M.C.H. Centres were opened in 25 districts. In the Fourth Plan period, 260 clinics will be established in different parts of the country. The number of district offices will be raised from 25 to 40. The programme intends to provide family planning services to 15 per cent of married couples. The facilities of B.C.G., small-pox, Polio,D.P.T. vaccinations and other treatment will be provided to 4,00,000 children under 5 years of ago. Maternity services will be made available in 10 villages. Other programmes include the training of health personnel of different levels, the construction of necessary buildings, and wider publicity on the values of family planning.

Curative Services

Attempts will be made to bring about greater coordination between the preventive and curative services, although the preventive health service is given priority in the Plan.

Progress in the field of health services in Nepal during the last few years has been considerable. At present there are 54 hospitals with about 1875 hospital beds, and the number of doctors has reached 300. Since a large number of these are centered in Kathmandu and a few other urban areas, the facilities for curative services in other parts of the country are negligible. So keeping in view the growing demand of the people for curative health services, the Fourth Plan aims to increase the number of beds and other facilities in the existing hospitals and to provide some facilities for specialised treatment at the zonal hospitals.

The existing hospitals will be developed into three categories: 50 to 100-bed zonal hospitals, 25 and 15-bed hospitals. As far as possible, uniformity will be maintained in the provision of similar technical and other facilities in all hospitals of the same category.

a. 50 to 100-bed hospitals

At present there are 50-bed hospitals in Butwal, Jaleswar, Pokhara, Biratnagar, Birgunj and Nepalgunj. But they do not possess all the facilities necessary for 50-bed hospitals. So in the Fourth Plan, all the 50-bed hospitals will be developed into 'referal' hospitals, and the necessary technical personnel, apparatus and other facilities will be provided. Due to the increasing number of patients and the growing demand for hospital beds, the Biratnagar hospital will be converated into a 100-bed hospital by providing 50 additional beds. Similarly the Rajbiraj hospital will be converted into a 50-bed hospital by adding 25 maternity beds.

b. 25-bed hospital

At present, there are four 25-bed hospitals in Lalitpur, Bhaktapur, Gaur, and Hetauda. In the Fourh Plan period, Bhadrapur and Janakpur hospitals will be converted into 25-bed hospitals. The 25-bed hospitals of Lalitpur, Bhaktapur, Bharatpur, Hetauda and Gaur will be provided with better facilities.

c. 15-bed hospital

At present there are eighteen 15-bed hospitals in Ilam, Kalaiya, Dang, Dhankuta, Rangeli, Sirha, Bhojpur, Doti, Taulihawa, Baglung, Sarlahi, Jumla, Dadeldhura, Parasi, Kailali, Bhairahawa, Dharan, and Bandipur but many of them are not functioning satisfactorily due to the absence of necessary personnel, equipment, and other facilities. In the Fourth Plan period, these hospitals will be provided with the necessary facilities. The hospitals of Shivraj, Bardia, Inarwa, currently with less than 15 beds, will be converted into 15 bed hospitals.

d. Bir Hospital

During the Third Plan, a new surgical block was created with an addition of 70 beds. Some more beds will be added during the Fourth Plan in order to provide an intensive training centre for the Nurses Training School and to meet the growing demand for hospital beds. Other programmes for the development of Bir Hospital include the development of its various units, the creation of a coronary unit, the provision of some equipment, and construction.

e. Health Centres

In the Plan period, there is no programme for establishing new health centres. The existing health centres and dispensaries will be converted into 15-bed hospitals or health posts.

Training

Special attention will be given to a training programme to execute the proposed programmes of the health services in a more organised and planned way. Within the Plan period, it is not possible to provide the services of doctors in all parts of the country because of economic, technical, and administrative constraints. The number of doctors available during the Plan period will, therefore, be sufficient to run the proposed programme of health services. At present, the doctors are primarily in the curative services. Courses of public health orientation and graduate and post-graduate training in various public health subjects will, therefore, be arranged in order to secure sufficient doctors in the field of preventive services. Some will be sent abroad for specialised training, but only according to need.

a. Nurses Training

It is estimated that within the Fourth Plan period, the number of graduate nurses will reach 200. To reach this, the present intake of 40 students in Nurses Training School will be increased and additional facilities such as a staff building, educational materials, and apparatus will be provided to the School. Along with the graduate nurses training, provisions for post-graduate training will be arranged. Special attention will be given to public health nurses training for the running of regional health programmes and other preventive health services.

b. Auxiliary Health Worker Training

According to the target to open 225 additional health posts within the Plan period, 450 auxiliary health workers will be needed. Moreover, since auxiliary health workers have to be provided in each of the zonal offices and hospitals, 150 more auxiliary health workers will be required. So within this Plan period training will be given to about 600 auxiliary health workers. To achieve this new hostels and other buildings and an increased staff will be provided to the Auxiliary Health Workers School. The capacity of the school will be increased in order to organise refresher training courses for malaria inspectors and supervisors working under the Malaria Eradication Programme and for the existing dressers, compounders, and health assistants. Practical public health training will be provided in two village panchayats.

c Assistant Nurse Midwife Training

The Assistant Nurse Midwife Training Schools at present are running in Bharatpur, Biratnagar and Nepalgunj. They have a capacity of training 15 people semi-annually. As some 80-85 A.N.M's can be produced annually from these schools, a total of 400 A.N.M's will be made available

during the Plan period.But, during the Plan Period, 900 additional Assistant Nurse Mid-wives will be needed, 500 A.N.M's will be required for the 225 health posts, 250 will be needed for hospitals and zonal health offices, and 150 will be needed for existing health institutions. This additional requirement will be met by the candidates sent abroad on training under the Family Planning Programme.

Since the Nepalgunj training centre does not possess its own building, a new building will be constructed.

d. Laboratory Assistant Training

To meet the shortage of laboratory technicians in the country, training was started in 1968 at the local Central Health Laboratory, and in the current Plan period, training will be given to 60 laboratory assistants. Training will also be given to 500 health assistants and 60 other persons for a period of 3 and 6 months respectively.

e. X-Ray Technician Training

There are, at present, 14 X-ray machines in the country, but many of them are not in operation because of the shortage of technicians. During the Plan period, emphasis will, therefore, be given to the training of X-ray technicians.

Miscellaneous

a. Epidemiology Section

An Epidemiology section will be created to examine prevalent diseases of the country. This section will be created under the public health section of the Directorate of Health Service in order to make public health administration effective.

b. Health Education

A planned health education programme is important for the successful implementation of health service activities. The health education programme in the Fourth Plan includes school health education, training, and the production of educatonal materials. The zonal health education section will also be developed.

c. Central Health Laboratory

During the Plan period, the Central Health Laboratory will be developed. Investigations and research on different kinds of diseases, germs and other public and health problems will be studied. The chemical examination of foodstuffs and blood will also be conducted.

d. Ayurvedic Medicine

In our country where the facilities for medical services are not adequate, Ayurvedic treatment is very important. According to the policy of encouraging Ayurvedic treatment, attention will be given to Ayurvedic research. For this, the necessary arrangements for medical herbs and other materials will be made and a few dispensaries will be established in some

istricts. To raise the standard of Ayurvedic teaching, steps will be taken owards the conversion of Ayurvedic School into a College. Baidyakhana vill be provided with modern equipment for the production and sale of nedicines.

. Homeopathic Hospital

A 25 bed hospital with facilities for maternity and child health will e established.

. Mobile Medical Relief Team

Medical relief teams will be sent to those areas where proper health acilities do not exist.

. Mental Hospital

In this Plan period, the purchase of land and other necessary provisi-ns will be made for the establishment of a mental hospital.

. Constructions and Improvement

Some of the hospital buildings will be repaired and some new cons-ructions will be made. Hospitals will be provided with additional facilities.

. Medical College

The purchase of land and provision of other necessary facilities will e made during the Plan period for the establishment of a medical college n Nepal.

TABLE 123

FOURTH PLAN EXPENDITURE IN HEALTH

Project	Expenditure in Rs
1. Public Health Offices	
a. Zonal Offices	12,00,000
b. District Offices	15,40,000
c. Health Posts	1,60,00,000
2. Preventive Health	
a. Malaria Eradication	4,00,00,000
b. Leprosy Control	13,70,000
c. Tuberculosis Control	10,42,000
d. Small-Pox Eradication	1,10,50,000
e. Family Planning	4,09,74,000*
3. Curative Services: Hospitals	
a. 50 to 100-bed Hospitals	27,00,000
b. 25-bed Hospitals	20,00,000
c. 15-bed Hospitals	15,30,000
d. Bir Hospital	30,00,000

4. Training	
a. Nurses Training School	40,00,000
b. Auxiliary Health Workers School	40,00,000
c. Assistant Nurse Midwife School	23,05,000
5. Miscellaneous	
a. Health Education	12,25,000
b. Central Health Laboratory	5,00,000
c. Ayurvedic Medicine	10,00,000
d. Homeopathic Hospital	4,50,000
e. Mobile Medical Relief Teams	2,00,000
f. Mental Hospital	1,50,000
g. Construction and Improvement	1,00,00,000
h. Medical College	50,00,000
Ttotal	15,12,36,000*

* In the Nepali edition, the expenditure figurs for Family Planning and the total should be correced as above.

CHAPTER XXIV

DRINKING WATER AND SANITATION

There is a need for the adequate provision of drinking water and the proper management of sewerage system for the protection of health and sanitation in the community. In the absence of such services, there are possibilities of cholera, typhoid, dysentry and other communicable diseases.

Since it is the objective of His Majesty' Government to expand these services as much as resources permit, various drinking water projects have been started since the beginning of planning in our country. The following table shows the progress in this field during the various Plan periods.

TABLE 124

PROGRESS DURING DIFFERENT PLAN PERIODS

Plan Period	Achievement (In gallons/per day)
First Plan (1956-1961)	14, 52,000
Second Plan (1962-1965)	14, 95,000
Third Plan upto fourth year) (1965-1968)	49,48,000

It is estimated that 10 million gallons of water per day will be available by the end of the Third Plan. The number of drinking water projects implemented by the Government will reach 50, and about 6,00,000 people will benefit from them. The above figures make it clear that only six per cent of the country's total population have been provided with piped drinking water with the average per capita consumption rate of about 16 gallons per day. This can hardly be called satisfactory.

The Fourth Plan intends to expand the facilities of pure and adequate drinking water and sewerage which are so vital for the creation of a healthy society. The drinking water and sewerage programmes formulated for

this Plan period have kept in mind the existing transportation facilities, and the level of administrative and technical capabilities. Surveys of the water resources of the country will be conducted and reports on feasible projects will be prepared. The programmes of drinking water and sewerage for the Fourth Plan have been broadly divided in the following way.

1. New Projects

(a) Drinking water:

Drinking water projects have been undertaken or are in progress in 12 zonal and 33 district headquarters out of a total of 14 and 75 respectively. During the Plan period, 37 drinking water projects in district and zonal headquarters and selected village panchayats will be started. An outline summary of the main drinking water projects to be implemented during the Plan period, the quantity of water available, the number of people to benefit and the cost estimate are given in the following table.

TABLE 125

PROPOSED PROJECTS

Project Name	Availability of water (in gallon per day)	Estimated Population to benefit	Estimated Cost
1. Lalitpur Drinking Water Project	27,00,000	1,08,000	50,00,000
2. Bhaktapur Drinking Water Project	20,00,000	80,000	35,00,000
3. Surkhet Drinking Water Project	1,05,000	7,000	8,50,000
4. Dailekh Drinking Water Project	45,000	3,000	5,00,000
5. Sallyan Drinking Water Project	1,05,000	7,000	11,00,000
6. Other Projects*			65,00,000
7. Miscellaneous Projects			10,00,000
Total			1,84,50,000

(b) Sewerage System:

In the Fourth Plan sewerage disposal has been given priority in those urban areas where drinking water facilities already exist. A project report will be prepared after a survey regarding sewerage has been conducted.

*As shown in the Appendix

A Master Plan for Kathmandu Valley will be prepared in connection with the long-term planning of drinking water and sewerage with the assistance of the United Nations Development Fund.

Continuing Projects

Numerous projects that were started during the last Plan remain to be completed during the Fourth Plan period. A summary of these continuing projects, the estimated production of water, and the number of people to benefit from them is presented in the following table.

TABLE 126

CONTINUING PROJECTS

Name of the Project	Estimated production of water (in gallon per day)	Estimated No. of population to benefit	Estimated cost	Estimated expenditure in the Fourth Plan
1. Dang Tulsipur	1,24,500	5,500	7,92,580	7,00,000
2. Nepalgunj	2,00,000	9,000	14,93,000	2,00,000
3. Bhadrapur	2,00,000	8,000	13,03,600	4,00,000
4. Dhangadhi	1,40,000	2,000	4,77,000	1,00,000
5. Banepa	1,50,000	12,000	7,25,000	2,00,000
6. Mahendra Nagar	1,80,000	12,000	13,20,000	10,00,000
7. Sunakothi Thecho, Chapagaon	1,56,700	15,000	11,25,200	4,00,000
8. Palpa	50,000	3,000	2,87,000	1,00,000
9. Butwal Kharsyauli	4,50,000	18,000	20,20,000	16,00,000
10. Tiram (Piuthan)	4,000	700	1,20,296	50,000
11. Bhaktapur Extension	8,00,000	40,000	9,71,000	4,00,000
Total	24,55,200	1,25,900	1,06,61,876	51,50,000

After completion of these projects, the supply of drinking water will be increased by an additional 24,55,200 gallons per day and 1,25,900 additional people will be provided with piped drinking water facilities.

3. Survey and Project Report

With a view to providing drinking water in as many different places as possible, feasibility reports containing project maps and estimated costs will be prepared after field surveys are done.

4. Establishment of Laboratory

A laboratory will be established during the Plan period to conduct the examination of chemical composition of the water, various technical studies necessary to maintain the standard of water, and provision of easy means for the maintainance and repair of different projects.

5. Miscellaneous

Necessary arrangement for the improvements and modernization (e.g. fixing of metres, filteration etc.) and for the repair and maintainance of the existing drinking water projects will be made during the Plan period.

Appendix

OTHER DRINKING WATER PROJECTS

Zone	District	Project Site
1. Bagmati	Kathmandu	1. Chobhar, 2. Syuchatar
	Lalitpur	1. Lubhu
	Bhaktapur	1. Dhadkhikot
	Kabhre	1. Phalante, 2. Ratmate, 3. Deorali
2. Gandaki	Kaski	1. Puranchaur
	Lamjung	1. Gilung, 2. Yangjakot
	Syangja	1. Karendanda 2, Darsing (Bharthan)
	Parbat	1. Mallaj
3. Dhaulagiri	Baglung	1. Phalebas
4. Lubmini	Gulmi	1. Righa, 2, Jubhung, 3. Rupakot
	Argha-khanchi	1. Balkot
5. Rapti	Piuthan	1. Lung
6. Seti	Achham	1. Ririkot
7. Narayani	Chitwan	1. Narayanghat
	Parsa	1. Pasupati Adarsanagar
8. Janakpur	Dolakha	1. Namdu
	Sindhuli	1. Madi, 2. Netrakali Anpdanda
9. Sagarmatha	Udaipur	1. Udaipur
	Bhojpur	1. Bhojpur
10. Kosi	Morang	1. Sakphara
	Tehrathum	1. Chuhan Danda
	Sunsari	1. Choukibarigaon
11. Mechi	Panchthar	1. Phidim
	Illam	1. Illam Bazar

TABLE 127

ESTIMATED EXPENDITURE IN DRINKING WATER AND SANITATION

Project	Expenditure Estimated in Rs.
1. Continuing Projects	40,65,200
2. Proposed New Projects	1,84,50,000
a. Bhaktapur Drinking Water Project*	
b. Lalitpur Drinking Water Project**	
c. Surkhet Drinking Water Project	
d. Dailekh Drinking Water Project	
e. Sallyan Drinking Water project	
f. Other Projects (24 districts)	
g. Miscellaneous Projects	
3. Survey of Drinking water Projects	2,00,000
4. Sewerage and Drainage Survey	1,00,000
5. Laboratory	3,00,000
6. Master Plan of Drinking Water and Sewerage for Kathmandu Valley	91,45,000
7. Improvements and Modernisation	50,00,000
Total:	3,72,60,200

* To be started from the third year of the Plan
** To be started from the second year of the Plan.

CHAPTER XXV

PANCHAYAT

The Panchayat system is an important medium for the mobilisation of the country's local resources and for the successful implementation of national development plans. For the real success of the partyless Panchayat system, it is essential to create a sense of mutual co-operation and co-ordination between the various villages and districts, as well as between the various Class Organizations. The objective of the Panchayat development programme is to bring about the proper mobilisation of manpower and resources and to secure active participation of the people in social welfare and national development. Considerable progress has been made in the generation of local financial and other resources during the Third Plan. Project implementation by local panchayats on their own initiative has greatly contributed to the success of social and economic development activities. During the Plan period, greater emphasis will be given to those programmes initiated at the zonal, district and village level in accordance with the principle of decentralisation.

Development Grant

The central government will provide development grants in order to involve the various district and village panchayats in development activities and assist in their local efforts. The districts will receive this grant according to the number of village panchayats within each district and geographical region in which they are situated. The development grant ratio range will not exceed 75 percent of the total investment of the project in case of A grade districts (Himalayan region), 50 per cent to the B grade districts (Hilly region), and 30 per cent for the Terai and Kathmandu Valley (Table128). In the above classification, a district is taken as a unit of administration except in the case of Mustang, Gorkha and Dhading districts. In Mustang district, the village panchayats north of Tukche (including Tukche) will receive grants according to grade A. Similarly, in Gorkha and Dhading districts the village panchayats north of Jagat (including Jagat) will be taken as grade A and those south of Jagat as grade B districts. In addition to this regional classification, agricultural development projects may receive up to 75 percent of the total investment of the project

in the form of Government grants. The priority for the development grant will be determined on the basis of the local effort in terms of project formulation as well as on project feasibility. In addition to the above categories, a system of competition in the utilization of development grants will be introduced. During the first year of the Fourth Plan period priority will be given to those districts that have submitted maximum number of village panchayat project forms (Table 129). Form the second year of the Plan, 14 districts will be selected annually, one from each zone on the basis of local efforts and progress evaluation. These 14 destricts will receive prioriy for develpoment grants:

TABLE 128

CLASSIFICATION OF DISTRICTS

Grade A 1	Grade B 2	Grade C 3
1. Darchula	1. Baitadi	1. Kanchanpur
2. Bajhang	2. Surkhet	2. Kailali
3. Bajura	3. Dandeldhura	3. Dang Deokhuri
4. Humla	4. Doti	4. Nawal-Parasi
5. Jumla	5. Achham	5. Chitwan
6. Mugu	6. Dailekh	6. Bardia
7. Tibrikot	7. Jajarkot	7. Banke
8. Dolpa	8. Sindhuli	8. Kapilvastu
9. North Mustang (Village Panchayat north of Tukche)	9. Rukum	9. Rupandehi
10. Manang	10. Udaipur	10. Parsa
11. Rasuwa	11. Salyan	11. Bara
12. Dolakha	12. Rolpa	12. Rautahat
13. Solukhumbu	13. Myagdi	13. Mahottari
14. Sankhuwa Sabha	14. Baglung	14. Sarlahi
15. Taplejung	15. Piyuthan	15. Dhanukha
16. North Gorkha (Village Panchayat north of Jagat)	16. Gulmi	16. Sirha
17. North Dhading (Villlage Panchayat north of Jagat)	17. Argha-Khanchi	17. Saptari
	18. Palpa	18. Sunsari
	19. Parbat	19. Jhapa
	20. Kaski	20. Kathmandu
	21. Lamjung	21. Lalitpur
	22. Gorkha (South of Jagat)	22. Bhaktapur

23. Dhading (South of Jagat)	23. Morang
24. Tanhu	
25. Nuwakot	
26. Makwanpur	
27. Sindhupalchok	
28. Kabire	
29. Ramechhap	
30 Okhaldhunga	
31. Khotang	
32. Bhojpur	
33. Dhankuta	
34. Terathum	
35. Panchthar	
36. Ilam	
37. Mustang (South to Tukche)	
38. Syangja	

TABLE 129

DISTRICTS TO RECEIVE PRIORITY DURING THE FIRST YEAR OF THE PLAN

S. N.	Districts	Zones	Percentage of grants
1.	Darchula	Mahakali	75%
2.	Bajura	Seti	75%
3.	Tibrikot	Karnali	75%
4.	Jajarkot	Bheri	50%
5.	Rukum	Rapti	50%
6.	Baglung	Dhaulagiri	50%
7.	Gorkha	Gandaki	50%
8.	Gulmi	Lumbini	50%
9.	Rasuwa	Bagmati	75%
10.	Parsa	Narayani	25%
11.	Sindhuli	Janakpur	50%
12.	Udaipur	Sagarmatha	50%
13.	Sankhuwasabha	Kosi	75%
14.	Ilam	Mechi	50%

Jiri Multi Purpose Project

The Jiri Multi-purpose Development Project was started to provide necessary technical and other facilities for the improvement of living conditions in the hill areas. The programme includes co-ordinated activities in such fields as agricultural extension, co-operative services, pastoral development, domestic science, general education and Panchayat training. Experience gained in this project will be useful for similar development efforts in other hill regions.

Training Programme

The objectives of the present Panchayat system are to develop the various levels of panchayats and to create the necessary environment to enable them to shoulder greater responsibility for the development of the country as well as to bring about changes in their traditional outlook and inculcate in them a feeling of self-reliance. The system has given the local panchayats the right to mobilise local resources for development purposes. In order to enable the panchas and local officials to shoulder responsibilities in various development activities, it is necessary to increase their efficiency through proper training.

The training programmes under the Fourth Plan have been classified into two main parts. The first includes zonal training centres which provide district- level training in the fields of education, health, postal services and others to those officials to be employed for the implementation of the decentralisation scheme. The other type of training will be provided to the village and local leaders. In addition to the existing training centres at Rampur, Chandragarhi and Nepalganj, a Panchayat Training Centre will also be established in Pokhara during the Plan period, and seminars on subjects of local interest will be organised in various parts of the country according to the need. Such programmes will be organised for women as well.

TABLE 130

TRAINING TARGETS

Financial Years	1970-71	1971-72	1972-73	1973-74	1974-75	Total
Training Centres						
1. Rampur	436	427	396	509	367	2,135
2. Chandragadhi	474	566	490	472	528	2,530
3. Nepalgunj	573	550	497	264	560	2,444

Zonal level training

Arrangements will be made to provide training in Mechi, Narayani, Bheri, Bagmati, Lumbini and Mahakali zones during the Plan period by

organizing seminars and conferences. One team will arrange 10 training camps and 2 conferences a year in one zone where a wider spectrum of local people can participate. During the Plan period 15,000 and 5000 persons will be given training by organising 450 training camps and 90 conferences, respectively.

District level training

District level training camps and conferences will be organized in 36 districts where zonal level training has not yet started. About 18,000 people will be given training in 1,800 training camps.

Women's field training

During the Plan period intensive training programmes will be conducted in various village and districts by setting up Women's Training and Extension Centres. Under this programme 74,820 persons will receive training. To fill up the shortage of technicians and effecient women workers, training will be provided in the field of home science(at the college level) and also to the women's workers, women's organisation workers and to the women volunteers, 825 persons are expected to receive training under this programme.

Volunteer Service

For the smooth implentation of village and district level projects, volunteers with technical knowledge and skill will be sent to the projects for a period of 2 years. To achieve this, the Plan aims to obtain 192 overseers and technical volunteers.

Remote area development programme

The panchayat system is making efforts towards all-round development for the people, and it will naturally take time to spread the development benefits to those wider area of the country which have remained underdeveloped for a long period. There are many areas in the country that need direct and special attention, without which their development would lag far behind. Therefore, the Remote Area Development Committee has been formed to provide greater attention to these neglected areas.

It is necessary to establish training centres in the border areas in order to meet the local needs of underdeveloped areas. In those areas, where multi-purpose high schools exist, training in subjects like animal husbandary, pasture development, dairy production, weaving of woolen products, agriculture and horticulture development, preservation, collection and sale of medicinal hebrs, building construction health and education, will be given in close co-ordination with the various departments. In areas where such training schools do not exist, training facilities will be provided with the help of the training division of the Panchayat Ministry.

Taking into consideration existing local facilities and needs, this training programme will be launched on an experimental basis. in four places such as Jumla, Jomsom, Jiri and Salleri where hostel building need to be constructed. The technicians will be rotated to those Training Centres for two to four months, and practical training will be provided either to the ward members of village panchayats or to their nominees.

TABLE 131

ESTIMATED EXPENDITURE IN PANCHAYAT

Project	Expenditure in Rs.
1. Development Grant	2,00,00,000
2. Jiri Multipurpose Projest	15,00,000
3. Panchayat Training Institutes	
a. Rampur	40,46,500
b. Chandragarhi	14,14,000
c. Nepalgunj	30,57,500
d. Pokhara (New Project)	25,25,000
e. Training Material Production Centre	5,14,000
4. Mobile Tranning (Male & Female Training and Women's Affair Training and Extension Centre)	50,00,000
5. Volunteer Service	27,000
6. Remote Area Development (Social Services only)	30,00,000
Total	Rs 4,10,84,000

CHAPTER XXVI

HOUSING AND PHYSICAL PLANNING

Housing problem in urban areas has assumed an urgent dimension as a result of the rapid growth in population. This problem has become particularly acute in Kathmandu and the neighbouring towns of Patan and Bhakatapur. The family residential limit density here is much higher than in any other part of the country because of natural increase as well as migration from outside. If timely attention is not paid to this problem, considerable difficulties will arise in the management of human and land resources and public service facilities. Housing programme was included in a small scale during the Third Plan. The revised Third Plan intended to construct 16 model residential buildings, but this target could not be attained because of technical and administrative difficulties. It was also felt that the increase in the construction of buildings in the private sector might adversely affect the physical structure of the city, so greater attention was paid to strengthening the administrative capacity of the Department to work for the planned development of the urban areas. Accordingly, the Building Department was reorganized as the 'Department of Housing and Physical Planning' and a report, entitled. The Physical Development Plan for Kathmandu Valley', was prepared to guide policy formulation.

Housing and Physical Planning activities during the Fourth Plan period will deal with the necessary control and direction of the city's expansion and the establishment of standard residential areas.

Physical Planning

Physical planning is very essential for the planned development of housing. Therefore, the following projects will be implemented during the Plan period in order to maintain necessary standard with regard to the density of settlement, modern amenities, and physical environment.

a. Parking Space

Kathmandu being the centre of administration and business and containing the storehouses of ancient and modern Nepalese crafts, the number of vehicles is increasing rapidly. The occurence of traffic congestion and inconvenience in human mobility tend to increase if the transportation programme is not planned in accordance with the increase in the number of vehicles. A parking lot will be constructed in Kathmandu city as a supplement to transportation planning.

b. Town Planning

If timely attention is not paid to the increased urbanization accompanying the process of development, it will create numerous problems in the near future. In order to avoid this situation and to bring about planned development of urban areas, steps will be taken for planned development of towns like Pokhara, Biratnagar, Dharan, Bhadrapur, Inarwa, and other towns.

c. Lumbini Area

In the context of developing places of historic importance, a detailed survey will be conducted in Lumbini, the birth place of Lord Buddha, and a project will accordingly be prepared. Facilities like drinking water will be made available in the new development area.

Housing

The following Housing activities will be implemented during the Plan period.

a. Kathmandu Valley

In view of the increase in population and density in the urban areas of Kathmandu, an intensive survey between Balaju and Kalimati will be conducted, and land will be sold at reasonable rates to middle and low income government employees. The necessary infrastructure of building construction in the area will also be provided.

b. Other Towns

Housing plans for new settlements will be prepared in the areas delineated in the master plan for physical planning in places like Pokhara, Biratnagar, and Birgunj, which have commercial and industrial importance.

TABLE 132
ESTIMATED EXPENDITURE IN HOUSING AND PHYSICAL PLANNING

Project	Expenditure in Rs.
1. Construction of Parking Lots in Kathmandu	5,00,000
2. Physical Development Plan of Pokhara, Biratnagar and Birgunj and Improvement and Development of Bharatpur Dharan etc.	5,00,000
3. Lumbini Development	3,00,000
4. Housing Development (Kalimati to Balaju)	1,00,00,000
5. Housing Development in Pokhara, Biratnagar etc.	15,00,000
Total:	Rs. 1,28,00,000

CHAPTER XXVII

PUBLICITY AND BROADCASTING

Publicity and broadcasting plays an important role in national development. It is important to provide information on plans and programmes in order to make the people conscious of national development and to receive their co-operation in the development activities.

During the Third Plan period, the publication of 130 books and booklets, 19 folders and 25 scenic posters were undertaken. Also, 2 feature films and 19 documentaries were prepared. These documentaries and films were shown in various parts of the country through the mobile teams. Similarly, machinaries worth about £ 56,000 were made available for the development of H.M.G. Press. One lino-type machine was provided to Gorkhapatra Corporation. By means of the routing machine made available to H.M.G. Printing Press, 4,390 blocks and 1,655 photographs were prepared. Similarly in the field of broadcasting, 374 community listening centres were set-up in different panchayats. A 100 kilowatt short-wave transmitter was installed facilitating transmission abroad as well. Some officials were sent abroad for training on radio programming and other technical subjects.

Publicity

a. H.M.G. Printing Press

During the Fourth Plan, new machinary and buildings will be provided in order to modernise and improve the H.M.G. Press. Nine technicians will be sent to the U.K. for two year's training so that there will be well-trained personnel to run the programmes of the new printing press. Construction of the building and installation of necessary machines will be completed, and printing work will be started during the Plan period.

b. Film Production

The interest of the people towards film production in Nepal has been growing over the past few years. His Majesty's Government has also produced a number of feature films. Film production is expensive, especially when processed outside the country. So far, films produced by the Department of Publicity have been prepared in Indian laboratories. If this work were

done inside the country, there would be considerable saving in expense and time. Therefore, one of the programmes will be to produce and process films within the country. The main objective of this project is to create the necessary facilities for the production of films inside the country by constructing a studio and a laboratory. A suitable building will be rented for the installation of the new film laboratory.

Broadcasting

It is necessary to make broadcasting services more effective if local people are to be briefed about national efforts. During this Plan period, the existing 10 kilowatt medium-wave transmitter will be converted into a regional station, and another regional station will be established in the western hill.

TABLE 133

ESTIMATED EXPENDITURE IN PUBLICITY AND BROADCASTING

Project	Expenditure in Rs.
Publicity	
1. Films Production	22,00,000
2. H.M.G. Press	23,71,000
Total	45,71,000
Broadcasting	
1. Regional Broadcasting Station (western hill)	32,00,000
a. Transmitter and equipment	28,00,000
b. Land and Building	2,50,000
c. Miscellaneous construction	1.50,000
Total	32,00,000
Grand Total	77,71,000

CHAPTER XXVIII

ADMINISTRATION REFORM

An efficient and effective public-service-oriented administrative mechinary is needed for the implementation of policy decisions and directions for the economic and social development of the country. Some essential projects dealing with administrative reform have been included in the Plan in order to bring certain planned reforms. This has become necessary because of an unprecendented increase in administrative function during recent years.

During the Third Plan, most of the central offices were surveyed with respect to their organization and working procedure. With a view to regularizing posts of a permanent nature, 1200 out of 1500 posts which had been on the development side were investigated. Several measures, such as the implementation of some recommendations of the Administrative Reform Commission amendment concerning the Civil Services Act in the context of Career Development, the preparation of a new type of confidential report, the implementation of job classifications, the publication and distribution of the Civil Administrative Manual, the code of conduct, and the new classification of typists have been undertaken. The survey of the Civil Records Office has been completed. Pre-Service and In-Service trainings have been provided to 130 and 776 Gazetted Officers, respectively, in order to bring more efficiency in administration. Similarly at the Non-Gazetted level, 463 persons received office assistants training, 55 shorthand. 1370 district training, and 1578 typing Officials were provided training in general administration.

Administrative Training

As a result of unprecendented increases in the functions of H.M.G., the following training programme will be implemented during the Plan period in order to meet the demand for trained personnel and to bring about efficient changes in administration.

a. Gazetted Officers

Pre-service and in-service training will be provided to 500 and 200 persons, respectively, in order to provide them with greater knowledge of the state of affairs and to enable them to bear greater responsibility. The

shortage of administrative courses in the pre-service and in-service technical training conducted by different departments could be met from the the above training. In case of gazetted special and first class civil servants, seminars will be organized in different parts of the country for the exchange of ideas.

b. Non-Gazetted Personnel

An efficient administration requires capable assistants and clearical staff. Therefore, training (including shorthand and typing) will be given to 1200 junior employees of the Secretariat.

c. District Training

The personnel in district and regional offices, will be provided training in administration and typing. Two mobile teams sent from the center will provide this training in about twenty districts. This team will also prepare a survey report regarding O & M (Organization and Management) of district-level officers.

Administration Reform

Steps will be taken after investigation of suggestions and recommendations given by specialists, seminars and conferences regarding administration so as to bring improvement in administration.

The following projects regarding administrative reform will be implemented in hopes of increasing the qualifications and work efficiency of the personnel.

a. Job Description Survey

This survey will be very helpful in classifying jobs on the basis of effeciency and qualifications required. Besides helping in the selection of the right man for the right post or for promotion, it will also increase the effeciency of civil servants.

b. Career Development Project

After the completion of the job description survey, the required posts and working groups would be created. The career development project would then be prepared for all groups of civil servants.

Incentive to Civil Servants

1. In order to develop a sense of security, job satisfaction and stability in the service and to create a healthy tradition regarding the appointment, transfer and promotion of civil servants, existing civil service regulations will be reviewed and new rules will be formulated.

2. The provision of some essential facilities for civil servants and their dependents (like housing, health, and education will also be included in the Civil Service Act.

Retirement of Civil Servants

The Civil Service Act will be amended to improve retirement benefits and to recruit youths with new ideas and new spirit after the inefficient and dissatisfied persons have been removed.

Organization and Working Procedure

Changes will be made in the organization and working procedure of the civil service in order to increase the efficiency of the personnel.

H.M.G. offices at the central and district level will be surveyed, and suggestions will be presented concerning further simplification of work procedures and the delegation of authority. In the field of administrative reforms, necessary action will be undertaken after the study of the Administrative Survey reports.

Building construction

Construction and renewal work will be done in Harihar Bhawan to provide physical facilities for the Administrative Training Centre.

TABLE 134

ESTIMATED EXPENDITURE IN ADMINISTRATION REFORM

Project	Expenditure in Rs.
1. Job Classification Project	2,00,000
2. Administrative Survey of Offices of H.M.G.	90,000
3. Research and Administrative Project Special Class	1,00,000
4. Seminar of Gazetted Class I and II Officers	75,000
5. Training Project	18,32,000
6. Renewal, Construction Work in Harihar Bhawan	3,00,000
Total.	Rs. 25,97,000

CHAPTER XXIX

STATISTICS

Statistical data constitute the main basis for drafting development projects. It could be said that any attempt to prepare a plan without statistics is an exercise in impossibility. One of the main reasons, the preceeding plans were not as practicable or successful as they should have been, was the lack of relevant statistics. Statistics development was given its due place in the preceeding Plan periods so that such deficiencies could be overcome and proper information regarding the state of affairs of different sectors could be obtained.

Nepal does not have a very long history of collecting and analysing statistical data. Although the tradition of census taking was initiated in the year 1911, the collection of data regarding agriculture, industry and other social and economic matters was started only in the past decade. Data are already available in the following areas: agriculture and population census of the year 1961-62, estimation of gross domestic product since the year 1964-65, and satistics dealing with export and import since the year 1956-57. In order to make these more effective and intensive, the organizational structure of Central Bureau of Statistics (CBS) has been made more functionally oriented since the last year of the Third Plan and its status has been upgraded to that of general direcorate. It has been customary to send personnel from the center to collect data dealing with the regions. However, it was found to be expensive, and the information collected was not very dependable. Branch offices have, therefore, been established in all 75 districts of the country, and the practice of collecting relevant local statistical data at the branches and then sending it to the centre for analysis has been in effect since the end of the Third Plan period. The construction of a new building has also been completed in order to cope with the problems of space resulting from the extension of function and organization of the Bureau.

Fourth Plan

In order to make statistical information dependable as possible and to make it available promptly, several projects involving standardization, coordination and mechanization will be done during the Fourth Plan period. If statistical data of a similar nature are assembled from seperate institu-

tion or government offices, it is difficult to sandardize them; and those using such data may find it very confusing. Also, duplication may arise because statistical data collected by one institution may be collected by another. Arrangements to control such duplication will be made during the Fourth Plan.

Even if the collection of statistical data is done by other departments, computation, coordination and standardization of such data will be done by Central Bureau of Statistics. Major undertakings of censuses and surveying will be done only by CBS.

Programme

a. The decinnial census of Nepal will be taken in the year 1971. It will be possible to collect more information than was possible previously and to make it confirm to international standards. Because labour statistics have been lacking, manpower planning has been difficult. Necessary questions regarding labour will be included in the census questionnaire to be used in the year 1971.

b. Since agricultural statistics are specially important in our country, it has become necessary to have an agricultural census taken once every decade. The first agricultural census of Nepal was taken in the year 1961 and was confined to selected villages. In order to make the census 1971 (2028) more dependable, it will be done in the wards comprising 15 per cent of the Village Panchayats of the country.

c. Surveys regarding the population should be done every two years in order to determine periodic increases in population and other relevant factors. This will be done in the third and fifth year of the Plan.

d. In addition to the programmes mentioned above, the following works will be done during the Fourth Plan period.

(a) Animal Resources Survey
(b) Agricultural Investment Survey
(c) Internal Trade Survey
(d) Industrial Census
(e) Survey of Fishery
(f) Family Survey
(g) Annual Estimates of G. D. P.

5. In order to have such data analyzed and published as fast as possible, modern computing machines and relevant equipment will be installed in the Building of the Bureau.

TABLE 135
ESTIMATED EXPENDITURE IN STATISTICS

Project	Expenditure (Rs in million)
1. Population Census	Rs. 9.79 million
2. Agriculture Census	Rs. 4.65 million
3. Population Census Survey	Rs. 0.3 million
Total	**Rs. 14.74 million**

Appendixes

APPENDIX I

GROWTH RATE OF G.D.P.

In accordance with the aim to increase G.D.P. as much as possible and to extend the infrastructure required for future development, the Plan has been formulated on the basis of those resources felt to be available. In this process, continuing projects from preceeding Plan periods and new physical targets for different sectors have been given due attention. Although we are not in a position to project either the amount of growth expected as a result of the programmes to be implemented during the Plan or the total investment needed, the average actual increase in G.D.P. has been estimated at 4 percent annually on the basis of data available at the time of draifting of the Fourth Plan on the following assumptions.

The estimation of the actual increase in G.D.P. generated by the proposed investment has been based on an assumed capital-output ratio. As an estimate made on such a theoretical basis is bound to contain several short-comings, its utility is in fact debatable. If it is assumed in the context of the present economic system of Nepal, that the data available on output and capital formation demonstrate the relation between the two correctly, then theory would succeed in giving some numerical indication of the annual growth rate in G.D.P. and investment required for this purpose. It would also give some information regarding periodic national development projects, and their influence on the economic system of the country.

An estimation of G. D. P. between the years 1964-65 and 1967-68 has been made by the Central Bureau of Statistics. Estimates of the increase in G.D.P. should be made on the basis of the year 1969-70, the final year of the Third Plan. It is, thus, necessary to have information regarding G. D. P. in the years 1968-69 and 1969-70. On the basis of analysis of data available at C. B. S., assuming

that the annual increase of 2.2 per cent between 1965-66 and 1967-68 were to remain constant, the G. D. P. for the years 1968-69 and 1969-70 has been estimated to be 3.2 per cent. Assuming price level of the year 1964-65 to be constant, it is estimated that G. D. P. in the year 1974-75 will be Rs. 7,873 million, and the increase in the period between 1964-65 and 1968-69 was Rs. 5,37.0 million.

TABLE 1

G.D. P. BASED ON THE PRICE LEVEL OF 1964-65

(Rs in Million)

Fiscal year	G.D.P.	Increase
1964-65	5,883	—
1965-66	5,856	-27
1966-67	5,896	40
1967-68	6,282	386
1968-69	6,420	138
1969-70	6,561	141

Estimated by
Central Bureau of Statistics.

The estimate of Gross Capital Formation during the period between 1964-65 and 1967-68 has also been made by the Central Bureau of Statistics. Since this estimate was made on the basis of current prices, it is necessary to convert it to the price level of 1964-65. However, since there is no official index estimates, the Indian price index was used in the case of machinery and chemicals and the Kathmandu price index in the case of other commodities. Thus, Gross Capital Formation estimated to be Rs. 1006.7 million at the current price level is only Rs. 929 million when 1964-65 prices are held constant. The figure of Gross Capital Formation obtained by Central Bureau of Statistics still needs to be revised, taking into consideration several factors. The figure for machinery between the years 1966-67 and 1967-68 should not have decreased. The reasons for the decrease are still to be found out. In addition, expenditures for transportation and the installation of machines have been not added to the calculations. Construction work done by government corporations and other industrial institutions have also not yet been added. On the basis of these changes the figure of Gross Capital Formation between the years 1964-65 and 1967-68 has been found to have increased from Rs. 929.9 million to Rs. 1250 million.

TABLE 2

GROSS CAPITAL FORMATION

(Rs. in million)

Fiscal year	Machinery & Implements	H.M.G. construc-tion	Building	Pancha-yat	Total	Total (Price level of (1964-65)
1964-65	44	45.7	101.9	4.1	195.7	195.7
1965-66	33.7	83.9	129.5	9.6	256.7	244.4
1966-67	18.3	89.2	142.6	7.2	257.3	234.0
1967-68	16.5	112.1	145.7	12.7	297.0	255.8
Total	112.5	340.9	519.7	33.6	19006.7	929.9

Source: Central Bureau of Statistics.

Thus the incremental capital-output ratio in the period 1964-65 to 1969-70 has been found to be 2.3. It is necessary to increase investment by Rs.1,312 million in order to increase national income by 21.7% (i.e. 4% annually) assuming the price level of 1964-65.

In view of sectoral allocations made during the Third and Fourth Plan periods, the capital-output ratio should increase in the Fourth Plan. However, it is not improper to estimate this proportion to be 2.5 because of an incomplete utilization of current productive capacity in different fields. Thus an investment of Rs. 3,280 million is necessary with regard of the above consideration. During the Plan period, total invesment of Rs. 3,540 million is planned in all sectors. The breakdown of this is expected to be as follows:

TABLE 3

SOURCES OF INVESTMENT

Public sector	2,190 million
Panchayat*	100 million
Residential Building	600 million
Private sector not including residential building	650 million
Total:	Rs. 3,530 million

A detailed description regarding these sources has been presented elsewhere, but it is estimated that Rs. 600 million needed for residential building construction will be available automatically. No consideration has been given to whether this amount will be available from financial institution or from the public sector.

* Includes investment only from its own resources.

From the above exercise, it is important to think about certain basic factors. Although necessary policy for investing Rs. 3,530 million during the Fourth Plan period have been formulated, the expansion of the financial system is expected to be quite substantial. In view of increases in credit, deficit financing through loans by the Rastra Bank, and local expenditures to be spent from foreign aid, the purchasing power of currency will increase at a rate greater than total investment. But this is not likely to cause an adverse effect upon the balance of payment situation of the country. It is not improper to adopt such an expansionist policy in order to increase development activities because there are substantial reserves of convertible foreign-exchange and Indian currency.

APPENDIX II

CLASSIFICATION OF DEVELOPMENT EXPENDITURE

The National Planning Commission has prepared the following guideline for classification of development expenditure. This new classification for regular and development expenditure will be followed by Ministry of Finance and will be made applicable from the coming Fiscal Year 1970-71.

1. All new investment projects except the following will be treated as developmental:
   (a) Defence
   (b) Police and internal security
   (c) Foreign service
   (d) Investment for such projects as construction of monuments, statues, museums and parks meant for the direct benefit of the public.
   (e) Construction of government building and purchase of equipment for general administrative purposes.
2. Expenditure for major renewal work of continuing projects, except for the above mentioned purposes, will be considered to be developmental.
3. All expenditure dealing with research works, pilot studies and special surveys will be considered to be developmental.
4. Any programme or project whose expenditures are largely recurring, rather than in the form of invetment, will be considered to be developmental only if it has direct impact on output and productivity.
5. Investment in and capital loans to other government agencies and public corporations will be treated as developmental.
6. Transfers to other agencies of HMG purposes will be considered developmental only if the end use of the transfer coincides with the above five guidelines.

It is necessary to clarify here that neither all capital expenditure should be considered development expenditure nor all annual expenditure regular expenditure. Whether such expenditures are to be classified as regular or developmental expenditure depends on the type of programme or project and their consistency with the six guidelines of the Planning Commision. From this point of view, the following general rules have been proposed for classification of the budget.

1. All capital expenditures will be considered to be developmental expenditure, with the following exceptions:
   (a) Constitutional organs, viz. His Majesty the King, Royal family, National Panchayat, Auditor General's Office, Supreme Court, Public Service Commission, and Election Commission.

(b) General Administration viz. Cabinet, Secretariat of HMG, District Administration, Police, Jails and Miscellaneous Departments.
(c) Revenue Administration, viz. Land Revenue, Customs, Excise, Tax, Revenue Tax Court.
(d) Mint and Accountant General's Office
(e) Judicial Administration
(f) Foreign Service
(g) Defence.
(h) Facilities for sports and recreation and items of direct public consumption viz. Parks, Playgrounds, Monuments, Temples, Museums, Zoo, Theater, Archeology etc.
(i) Central directorates established for the purpose of supervision and direction in the sectors of economic and social services and
(j) Metric Measurement Project.

2. All recurring expenditures except the following will be considered regular expenditures.
(a) Special kinds of health programmes having a targeted date of completion viz. Malaria Eradication, Eradication of Smallpox, Tuberculosis etc.
(b) Family Planning
(c) Land Reforms
(d) Programmes dealing with special kind of survey, pilot study and research.
(e) Technical and vocational education and special training projects.
(f) Popularization and distribution of agricultural inputs e.g. seeds, fertilizers etc.
(g) Agriculture extension services
(h) Special area development projects like Jiri Multipurpose Project and Trisuli Watershed Project.
(i) Grants and loans made to financial institutions and development agencies like NIDC, Agricultural Development Bank, Land Reform Saving Corporation, Agricultural Supply Corporation and Nepal Rehabilitation Company.

In according with the above guidelines, regular expenditures now included in the development budget and development expenditure now included in the regular budget have been seperated. In the present regular budget there are comparatively few items which can be termed developmental. Nevertheless, it is suggested that such expenditures be shifted to development side. In this manner, the following expenditures should be transferred from regular to development.

Present Regular Budget grant No. 27 Education

Capital grants to educational institutions, capital expenditures, scholarships, and student allowances given in educational institutions operated by HMG.

Regular Budget allocation No 28 Health

Capital grants to private health institutions, capital expenditure in existing hospitals, health centers, health posts and clinics, all expenditures in existing medical training institutions, and scholarships and stipends for health training.

APPENDIX III

REGIONAL DEVELOPMENT PLANNING

Planning involves a judicious programming of priorities whereby the achievement of certain goals is related to short and long term time factors. Since regions vary in resource endowment, development activities lead to significant transformations in the spatial articulation of the economy. Any development strategy for stimulating growth should, therefore, take full cognizance of the **spatial dimension.** Development is highly competitive in its locational policies and calls for a conscious regional strategy that promotes redistribution of resources, while maximizing economic growth and national welfare.

National development programmes as such offer little scope for analysis and action at the regional level since the analysis relies largely on macro-economic variables and aggregate data. Also, the sectoral programmes may not be well integrated in their locational aspect. The long-term objective of planning, however, is not merely an attainment of broad national targets, but also the development of resources in different regions in order to share the benefits of development as widely as possible without slowing down the overall growth. Regional development planning is a comprehensive approach towards the reconcilation of economic and social aims, as well as a means of broadening the scope of the allocative processes of the national plan. Comprehensive regional planning defines national policies with regard to regional economic disaggregation, as well as the integration of local activities and actions for problem areas. Regional planning provides an important link between the micro-analytic concerns at the local level and the macro-economic objectives at the national level by stressing the coordinative relations between programmes in particular localities and new resource combinations for improved land use.

The consideration of the national objectives and regional challenges of national planning indicates a close relationship between national and regional economic planning. Regional planning is a technique which attempts to accelerate the attainment of the national development objectives and the collection of data for improved planning in specific geographical areas. Regional planning techniques prevent the scattering of scarce resources in an imbalanced manner by concentrating investment efforts in selected areas. By concentrating the efforts in judiciously selected areas, regional

planners are in a position to incorporate the exact location of investment projects and to link the projects in a logical investment sequence. The main difference between regional and national planning techniques, therefore, is in the degree of detailed planning. National and regional growth and development are, therefore, complementary aspects of the same cumulative process. Regional development policies should be considered as a tool for comprehensive development at the national level, in which all parts of the country contribute in their own way to the attainment of national objectives. Such a regional approach is particularly relevant to Nepal which exhibits a high degree of spatial diversity and a low economic level, thereby necessitating a careful allocation of scarce resources.

I. REGIONAL DISPARITY

The physical setting of Nepal, encompassing the plains, hills and mountains, yields three broad geographic regions, each with its own distinctive environment. The **Terai Region** (including Inner Terai) refers to the low-lying tropical plains along the southern part of the country. The Terai, once a harsh zone due to malaria, has since acquired greater economic importance because of its rich forest and agricultural resources. Its comparative advantage in transportation and consequent industrialization has further enhanced the region's growth potential.

The Hills or Pahar Region, traversing the sub-tropical belt, has been the traditionally most highly populated zone of the country. Subsistence agriculture is the basis of the hill economy, accompanied by considerable pressure of population on land resources. **The Himalayan Region,** including the temperate highlands and trans-Himalayan Bhotea Valleys, has been a marginal area for human occupance because of its harsh environmental conditions. Population is sparse and the main economic activities are barter trade, animals and some agriculture.

These geographic regions correspond to the altitudinally arranged ecological zones and naturally imply inherent differences in natural endowment. The regional disparity is amply demonstrated by the man/land ratio among the regions (Table I). The Himalayan and Hill Region covering two-thirds of the total area and supporting 60 per cent of the population have less than a third of the total cultivated area, indicating a heavy pressure of population on limited agricultural land.

TABLE 1

REGIONAL DISPARITY

Criteria	Mountains and Hills	Terai & Inner Terai	Kathmandu Valley	Nepal
1. Land Area (Percentage)	74.8	24.8	0.4	100
2. Population, 1961 (Percentage)	58.7	36.4	4.9	100
3. Population Density, 1961 (Per. Sq. Mile),	157	244	2,110	173
4. Population Increase 1952-54-1961 (Percentage)	10.7	14.6	11.9	14.0
5. Cultivated Area 1967-68 (Percentage)	31.8	65.3	2.9	12.98
6. Food Grain (Metric Tons)	—2,29.869	-565,852	—	3,35,983
7. Large-Scale Industry	—	62.5	37.5	100
8. Transport				
a. All-weather roads (Percentage of milage)	45.4	34.4	20.2	100
b. Number of airports	2	12	1	15
9. Social Services				
a. Education (High School- Colleges)	150-7	124-11	74-18	348-36
b. Health (Health Centre-Hospital)	70-18	24-28	3-11	97-54
10. Number of Development Projects, 1956-1970 (Percentage)	14	28	34	22*

* Nation-wide Projects

Another dimension to this problem is the weak link between the food-deficit Hills (where majority of the population live) and the food-surplus Terai region. High transport cost discourages retail marketing and inter-regional trade so that the circulation of goods and services is dependent upon the large-scale mobility of population. The traditional circulation pattern of trading with Tibet in summer, when the mountain passes become snow free, and with India in winter, when malaria was less dangerous, has experienced fundamental changes during the last decade due to the malaria eradication in the south and dislocation of trade in the north. The malaria eradication programme in the Terai has had a particularly important ecological impact on the spatial dimension of the country by strengthening the link with the south. The former two-way traffic between the north and south has been superseded by the gradual expansion of the southern markets.

The increasing dominance of the Terai (or Indian markets) is not due to rich resources alone, but also to the comparative advantage of the Terai in the field of development activities. In the present context, the Terai has become an area where development efforts in the agricultural, forestry,

and transport sectors have increased rapidly. The development of transport in Terai has led to increased circulation and concomitant urbanization associated with commerce and industry. Such an overt emphasis on the economic growth of the Terai may be defended by saying that initial development activities should take place in the regions of greatest potential so that the economic gains of such programmes might be later utilized for use in other backward areas. But such polarization of development effort would mean neglecting the greater part of the country. The density of population in the Hills has reached almost a crucial level endangering the very ecological balance. The present pattern of development offers no alternative to the further deterioration of the Hills economy to the eventual point when it will become difficult to provide even basic services. It is indicative of the fact that in the initial stages of development, regional inequality increases more sharply due to a number of disequalibrium effects. Again, in countries where industrialization is in early stages, the initial establishment of major industries in certain areas leads to a convergence of industries since these nuclei can be self-generating. This tendency is particularly striking in the case of Kathmandu Valley which has received over one-third of all development projects since the beginning of the planning process.

There are inherent problems in a policy of too much concentration in metropolitan Kahmandu, as well as in emphasizing diverse development activities within the Terai Region. The Terai may presently be a lucrative propostion as a newly-opened settlement area for the landless, but what of the future when this "living space" is also used up ? Another problem relates to land use allocation between agriculture, forestry and industry within a limited space of the Terai. The implications of such a polarization of development can be far reaching in the whole complex of the settlement pattern and population dynamics. If the migration of the population from the Hills to the lower elevations continues at the present rate, one inevitably foresees a rapid depopulation of the hills and mountains, thereby contributing to even larger regional differentials. A review of development efforts now in operation has been towards accentuating inherent natural differences through unplanned investment. The excessive concentration of economic and social activities in a few centres implies the desire to maintain the rest of the country as a stagnant residual and to create depressed areas on the one hand and physical urban maladies on the other. Therefore, the need is shown for regional planning, whereby inherent disequilibrium will be minimized by conscious spatial control of the national development programmes.

II. Objectives of Regional Planning

Regional planning provides a comprehensive spatial fromework within which locational decisions in particular sectors can be taken. It can thus assist in formulating national policies when they significantly affect the regions. Regional development planning would greatly contribute to the achievement of the following main objectives of national planning for Nepal:

(1) reducation of inter-regional disparities
(2) integration of the national economy
(3) breaking the vicious circle
(4) elimination of imbalances among projects
(5) analysis of regional economic structure

1. Reduction of inter-regional disparities

The preceding section amply reveals the North-South dualism (Hills vs. Terai), as well as the urban-rural dichotomy (Kathmandu vs. other districts) in terms of resource endowment and development efforts. The policy of balanced development envisaged for the Fourth Plan does not mean **pure** equalization among regions. This is neither possible due to differences in resources nor feasible in economic terms. The aim is rather towards a **greater** equalization between regions compatible with socio-political needs and financial resources of the country.

The present overt emphasis is in the development of Kathmandu Valley and the eastern Terai does not augur well for the long-term development of the country, since the answer to the question of whether Nepal's economy will ever reach an acceptable level of development capable of continuous growth will depend in large part on the sound economic development of the hilly region which support a large part of the population. A regional approach does not mean an equal distribution of resources in each and every region, but an initiation of comprehensive spatial planning in representative of regions with good potential for economic growth and the sharing of benefits accured. Such regional investment patterns could be spelled out in the form of explicit long-term plans through regional development planning.

2. Intergation of National Economy

The increasing dualism between the Mountains and Hills on the one hand and the Terai on the other is both an economic and political reality, and it is imperative that this differential be minimized. With the exception of Kathmandu Valley (which covers a mere fraction of the hills area), development activities are most pronounced in the peripheral Terai region. The grain surplus from this region is primarily exported to India, instead of catering to the food-deficit hill areas. The cereal grains from the Terai should be diverted to the needy Hills, but this is possible only if the Hills have something to offer in exchange. However, the Hills have very few surplus products to offer because relatively few development efforts have taken place in the hill and mountain areas when compared to those in the Terai. This is the reason why a gradual shift of investment from the Terai to the Hills should be undertaken in order to exploit fully the potentialities of the Hills. A careful selection of development areas in the Hills would open up diverse possibilities of developing numerous rich resources complimentary to the Tarai economy. Such a shift in development effort is also justified by the realisation that a large part of the investment made in the Terai are consumed by the Indian economy because of the close economic relations between the two coterminous areas. Moreover, the desirablity of

political integration of the North (Bhot and Pahar) and the South (Madhesh) of the country is best attained through economic circulation between these different geographical regions.

3. Breaking a Vicious Circle

"The opening of new roads supposedly implies the opening of new markets. The opening of new markets implies increased economic activity, and hence a higher standard of living. The above statement indicates that transport facilities are essential for further development. But it is erraneous to presume that transport facilities alone will "automatically" induce economic progress. Experience has shown in Nepal that the construction of roads should be preceeded by a through evaluation of the regional impact of the road, as well as simultaneous planning of economic activities in the service area. The greater the time-lag between road construction and the generation of supporting activities, the higher the economic cost of maintainace and repair.

Therefore, a crucial problem facing Nepal today is the poor position of the economy which does not allow for the construction of major north-south roads, whereas the lack of such a circulation is weakening the economic and political link among the regions. This realization is significant enough to arrive at the following dual conclusion:

(i) Even though the extent of economic activities prevailing in the Hills does not economically justify the construction of major north-south roads, the implementation of these roads cannot be postponed much longer.

(ii) The implementation of north-south roads can greatly contribute to the further development of Nepal only if the planning of these roads is complemented by the planning of regional economic activities in the Hills. The timing and scheduling of the implementation of these latter activities must be related to the completion period of the roads.

Hence, the vicious circle of "no economic activity-no road-no economic activity" can be broken by a simultaneous action of road construction and the comprehensive planning of regional economic activities.

4. Elimination of Imbalances among Projects

The elimination of imbalances between various projects depends largely on the scheduling and implementation of independent projects within a geographical location. Lack of locational considerations in co-ordinating sectoral activities in Nepal's past planning efforts is exemplified by the numerous instances of overcapacity and underutilization of project e.g. overburdened canals (Pokhara), underused hydropower (Trisuli), roads with minimal vehicular traffic (Kodari road), and intensive projects without a road link (Jiri). Imbalances between projects resulting in waste of resources are also to be found in the institutional framework. In the agricultural sector, for example, the branch offices of various agencies, when not located together, create practical problems for the farmer. Similarly, problem-oriented regional projects like the Rapti Project (resettlement), Jiri Project (Agricultural extension), Trisuli Project (resource manage-

ment) have inevitably ended up with accretion of numerous supporting activities. A comprehensive regional approach at the initial stages would have better equipped these project to deal with totality of their service area. The feature of imbalanced capacities of projects and programmes is primarily the result of the lack of co-ordination between projects at particular localities and the paucity of regional statistical data necessary for proper project evaluation. Regional planning, by providing horizontal spatial dimension to the vertical dimension of the sectoral programmes, would focus on the complementarity among and between projects.

5. Analysis of Regional Economic Structure

There is a great lack of data regarding population dynamics, input-output relationships, trade patterns, savings and capital formation, although these are essential to improve planning techniques both at the national and regional level. Moreover, information of national aggregates fails to provide an accurate picture of specific regions. Each regional economy is endowed with a varying amount of physical and human resources and there is an urgent need for evaluating these resources, as well as the market and service industry potentials for he different regions of the country. The basic obstacles to the development and implementation of regional programmes is the low level of regional information and statistics. Emphasis should, therefore, be placed on diagnostic survey activities to locate and explore available resources as well as to ascertain potentials and constraints for development. Regional planning would accelerate the process of assessing the resources and growth potential of the regions by using regional surveys and research studies into land capability, agricultural efficiency, accessibility, settlement pattern and industrial location. A detailed investigation in selected areas is most relevant to Nepal where there are great variations in the land-form, land-use structure because of sharp contrasts in regional physical complexes. Such surveys for specific areas in the process of regional development planning would provide insight into the reality of regions and improve the process of development planning.

III. Allocation of Resources

Regional planning serves the purpose of translating the national planning objectives and package of investment into their regional locational settings so that the different regions and sectors can develop accordingly in order to maximize the effects of the national plans investment potential. The regional economic policy should be such as to determine the nature of the contribution that each region would make to the totality of national targets and to regulate the pattern of resource use according to the most pressing socio-economic priorities. In order to achieve a more balanced growth of the nation set out in the plan objective, overt polarisation of development should be counteracted by rational regional distribution of investment to affect the growth of different parts of the country.

Regional distribution of resources is an important aspect of over-all efficiency in allocation. It determines the rate of growth for each particular region and hence also determines the growth of the entire nation. The pre-

sent domination of the sectoral approach should be balanced by regional approach in order to quantify the geographical distribution of investment in consonance with the regional policy of offsetting existing disparity among regions. The regional spatial approach would supplement considerations of the investment sectoral mix with a corresponding locational matrix that would make more explicit the impact of specific project investment on the regional economy and would provide a clearer framework to stimulate and analyze the desirable multipher effects of sectoral investment. This implies a strong budgetary control for locating specific projects according to rigorously worked-out regional norms with respect to various inputs and production. Thus, the selection of projects should not be only from the nature of undertaking by sectors but also according to their spatial location on the basis of socio-economic benefit eyaluation. Such an approach calls for careful regional analysis in order to establish those areas which need concentrated efforts to yield greater returns sooner as well as specific areas which require assistance for productive undertakings. Once the pattern of public investment is properly established, financial and fiscal inducement or restriction can provide incentives to private investment as well. It is essential that given region for development has to be shown to contain the most vital of the complimentaries of outlay. With this approach, regional planning defines government action more clearly by helping to determine the spatial co-ordination of sectoral programmes.

IV. Regional Development Programme

The regional development strategy for Nepal envisages a series of north-south growth axes or development corridors linking the diverse regions. The juxtaposition of a wide range of resources (the Terai, the Hills, and Himalayas) within a common development corridor will permit economic viability and will generate greater inter-regional circulation of goods, services and people. Comprehensive regional development programmes will be initiated in the following four growth axes (Table 2) during the Fourth Plan:

1. Kosi Growth Axis: Biratnagar to Hedangma
2. Gandaki Growth Axis: Bhairahawa to Jomosom
3. Karnali Growth Axis: Nepalganj to Jumla
4. Kathmandu Growth Axis: Birganj to Dhunche/Barbise

The four growth axes outlined above offer the greatest prospects for the intergration and co-ordination of the different development programmes since they present both the east-west and north-south territorial dimensions of the country. Each of the growth corridors either has a road or a road is presently being planned or constructed. These roads will link a series of growth centres where development efforts will be concentrated in order to achieve full economies of scale and to encourage agglomeration economies. Since these development corridors traverse whole gamut of regional types, the growth centres at specific locations will act as marketing and service centres for the regional population. The set of growth poles along an arterial link will induce further growth in terms of agricultural transformation, location of industries, trade activities and social services.

The comprehensive development of selected growth centres will act s demonstration areas for formulating development methods best suited o other areas displaying similar conditions. Thus Biratnagar, Birgunj, Bhairhawa and Nepalgunj will exemplify development patterns for the Terai towns while Dhankuta, Palung, Palpa, Syangja, and Dailekh will be models for hilly areas. In the Himalayan region Hedangma, Dhunche, Jomosom and Jumla will clearify development procedure for the remote areas. The objective of developing growth centres is the creation of polyfunctional settlements to cater to the diverse needs of the hinterland.

The most important aspect of the growth centre approach is the positive nature of polarized development as it takes place and the mechanisms whereby the growth centre spreads growth to the surrounding area. That is, through the process of multiplier effects, the areas linked to the growth centre will gain from the concertrated set of economic activities. The spread effects may begin to assert themselves from these nuclei of development as the economy fully integrates itself and commodity and factor markets become more efficient. In locating such growth poles, emphasis should be given to those areas with maximum prospect for radial effects in the peripheral regions. The four development corridors linking four sets of growth centres, transect Nepal approximately 80 to 100 miles apart with the assumption that their lateral impacts will meet at a certain point in time and thus cover the entire country. Regional development is by definition a long term problem. The process of lateral progression will be further accelerated by inter-axial transverse connections such as the Kathmandu-Pokhara road which link two growth axes. Though the East-West Highway provides a common link to the four growth corridors in the Terai, greater benefit will occur as the various corridors are similarly linked in the more populous hilly areas.

However, the main reasoning behind the development of growth axes through regional planning is to tie-in the economy of the developing Terai with those of the hilly areas. In order to maintain and develop the economic viability of the hills and transmit growth from one region to another, it is essential to determine and initiate those activities in the northern regions for which there is demand in the southern regions. The best way to integrate the national economy is to establish the nature and scope of the complimentarity of the northern and southern part of the growth axis in terms of organic circulation in trade, labour and capital.

V. POLICY FOR PROBLEM AREAS

The development of growth axes offers a basic regional policy in order to articulate iner-regional economic integration in the national planning strategy. However, a development policy committed to economic growth, as well as social justice, cannot afford to wait for the development corridors to solve all the ills of the present regional disparity. There is need for concurrent programme for the amelioration of problems of special areas ranging from the depopulation of frontier or marginal regions to the over-congestion in the metropolitan districts.

(a) Remote Areas

The mountainous part of the country has limited areas for effective utilization due to high altitude and adverse relief. Most of these Himalayan districts have less than five per cent of their total area under cultivation and agriculture can thus support the sparse population for only part of the year. Again, the decline of petty trading with Tibet, which was a major source of livelihood, has wrought immense economic hardships to these border people. In addition to these basic problems, the population residing in these areas is divorced from the mainstream of national life because of its remote location from the development centres of the country. The important pre-conditions for development of these depressed areas include increasing circulation with their southern regions through transport development and the revival of trade with the Tibetan region. The concept of the four development corridors including growth centres like Hedangma, Dhunche, Jomosom and Jumla in the Himalayan Region would further contribute to a rational policy for developing similar areas. The immediate programmes for the mountain areas should be in line with improving the transportation system and providing essential services. Some aid could also be given in order to permit orderly emmigration and training of the emigrants in the skills required by expanding industries in the adjacent areas.

(b) Metropolitan Areas

Urban areas provide another set of problems at a different level. Urbanization is an inevitable concomitant of development since urban nuclei absorb an unusually large proportion of the savings and capital funds. That the concentration of activities in the urban areas does not necessarily lead to desirable growth is well exempified by the excessive congestion and indiscriminate sprawling of metropolitan Kathmandu. Physical planning for urban areas should however be developed in the context of a larger regional frame-work encompassing the urban core as well as its rural periphery. The regional development plan for the Birgunj-Dhunche/Barbise growth axis has been designed precisely for the purpose of providing such an organic link between metropolitan Kathmandu and its environs. Meanwhile there is an urgent need to formulate a policy for creating a more efficient physical environment for the urban complex within Kathmandu Valley. The physical development plan for urban Kathmandu should explore into the possibility of involving more private investment. In the action programmes, priority should be given to the problems of housing and sewerage, essential services like drinking water, efficient circulation, and tourist and recreational facilities in terms of immediate needs and future needs due to population growth.

(c) Depressed Areas

Apart from the North-South (Hills vs. Terai) diversity, there are equally significant inter-regional differences between the Eastern (Kosi), Central (Gandaki), and Western (Karnali) sectors. The Karnali sector which accounts for nearly 42 percent of the total area supports only 21 per cent of the population. This sector is also deprived of the metropoltan ad-

rantages as of the Gandaki sector and those of periodic markets existing in the Kosisector. The low rainfall and extensive highlands contribute to Karnali's sparse population. The Terai, as well as the Hills of the far western part of the country, are therefore comparatively less developed than other similar areas. In order to develop the economy of the Karnali sector, it will be necessary to devise another growth axis for areas not amenable to the main Nepalgunj-Jumla axis. This supplemental development corridor should be aligned along the proposed Dhangarhi-Dadeldhura Road as a means of effecting economic activities to support this growth axis. This would be accompanied by a comprehensive development of the Jogbura Valley (Inner Terai) in Dadeldhura and appropriate activities in Bajhang.

TABLE 2

REGIONAL DEVELOPMENT AREAS

Growth Axis	Micro-Region	Developing Centres (Geographic Location)
A. Biratnagar-Hedangma	Kosi or Eastern Sector	1. Biratnagar (Tarai) 2. Dharan (Tarai) 3. Dhankuta (Hill) 4. Hedangma (Mountain)
B. Bhairahawa-Jomosom	Gandaki or Central Sector	1. Bhairahawa (Tarai) 2. Butwal (Tarai) 3. Tansen (Hill) 4. Syangja (Hill) 5. Pokhara (Hill) 6. Tukche (Mountain)
C. Nepalgunj-Jumla	Karnali or Western Sector	1. Nepalgunj (Tarai) 2. Surkhet (Inner-Tarai) 3. Dailekh (Hill) 4. Jumla (Mountain)
D. Birgunj-Kathmandu	Metropolitan	1. Birgunj (Tarai) 2. Hetauda (Inner-Tarai) 3. Kathmandu Valley (Metropolitan) 4. Barbise (Hill) 5. Dhunche (Mountain)
		Tarai — 6 Inner-Tarai — 2 Hill — 6 Metropolitan — 1 Mountain — 4 Total No. of Centres — 19

80°
81°
82°
83°
30°
29°
28°
27°
Mahakali R.
VYASRUSHI HIMAL
HUMLA BHOT
SAIPAL
Chaulyani
Karnali R.
Seti R.
Surma Gad
Burigange
MAHABHARAT
Jogbura
CHURE RANGE
WESTERN
Jumla
Tila
KANJI KOBA
Langu R.
Karnali R.
DOLPA BHOT
LEKH
CHURE RANGE
Chisapani
SURKHET
MAHABHARAT
LEKH
DANG VALLEY
Babai R.
CHURE RANGE
DEOKHURI
Rapti Gad
DHAULAGIRI HIMAL
MAHAB
CHUR
CENTRAL
Land over 10,000 feet.

82° 83° 84° 85°

U MKL BHOT

Mugu Karnali

KANJI ROBA

Lanpu R.

Jumla

Tila

DOLPA BHOT

MUSTANG BHOT

N

P

HET MAHABHARAT

DHAULAGIRI HIMAL

PAHAR

MANANG BHOT

ANNAPURNA HIMAL

GORKHA HIMAL

GANESH HIMAL

LANGTANG

CHURE RANGE

LEKH

DANG VALLEY

Pokhara

CENTRAL PAHAR

Bari Gad

Seti R.

Kali Gandaki

Tinau R.

Rapti R.

CHURE DEOKHURI RANGE

MAHABHARAT LEKH

CHURE RANGE

NAWALPUR

CENTRAL TARAI

Bhairahawa

NARAYANI R.

MAHABHARAT LEKH

CHITAWAN

KATHMANDU

CHURE RANGE

CENTRAL TARAI

Sunkosi R.

MARIM

CH

82° 83° 84° 85°

NEPAL

ORIENTATION MAP

Miles 10 5 0 10 20 30 40 Miles

85° 86° 87° 88° 30° 29° 27°

GORKHA HIMAL
GANESH HIMAL
LANGTANG JUGAL H.
EVEREST
KHUMBU HIMAL
ROLWALING HIMAL
KUMBHKARNA
JANNU H.
KANCHENJUNGA
LUMBASUMBA
SHINGSA
PAHAR
KATHMANDU
MAHABHARAT LEKH
CHITAWAN
CHURE RANGE
MARIM
EASTERN PAHAR
CENTRAL TARAI
EASTERN TARAI
Chhatra
TARAI

Traced by,
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